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DISEASES OF THE SKIN.

VOL. II.

DISEASES OF THE SKIN

THEIR

*DESCRIPTION, PATHOLOGY, DIAGNOSIS
AND TREATMENT*

WITH

SPECIAL REFERENCE TO THE SKIN ERUPTIONS OF CHILDREN

AND

AN ANALYSIS OF FIFTEEN THOUSAND CASES OF SKIN DISEASE

BY

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CLASS VIII.

NEOPLASMATA—NEW GROWTHS.

THIS is a large, important, and somewhat heterogeneous group, of which the main feature is a growth or infiltration of new elements in the skin. It may be subdivided into—

1. Degenerative neoplasms, or such as are characterised by the presence of marked degenerative changes, comprising molluscum contagiosum, colloid of the skin, and xanthoma.

2. Infiltrative, in which the neoplasm consists chiefly of infiltration of granulation cells in the cutis, comprising such diseases as, tuberculosis, syphilis, lepra, and rhinoscleroma. They are all of schizomycetic origin, though the organism of syphilis has not yet been identified. It is probable that Kaposi's idiopathic pigmented sarcoma really belongs to this section.

3. Tumours of benign nature, such as keloid and fibroma affecting the connective tissue; neuromata involving the nerve tissue; myomata, the muscle tissue; nævus vascularis and telangiectasis, the blood vessels; lymphangiectodes and lymphangioma, the lymphatics; and to these moles may be added, as, like most of the others, they are of congenital origin.

4. Tumours more or less malignant in their characters and course, comprising carcinoma, epithelioma, rodent ulcer, Paget's disease of the nipple, sarcoma, leukæmia, and pseudo-leukæmia cutis.

5. Fungating granulomata, including mycosis fungoides, yaws, verruga peruana, furunculus orientalis, ulcus inguinale tropicum, granuloma pyogenicum. Several of these are contagious, and all except mycosis fungoides are certainly of microbic origin, and that disease also is probably due to an organism either directly or indirectly.

MOLLUSCUM CONTAGIOSUM.*

Deriv.—*Molluscum*, a mollusc, from *mollis*, soft.

Synonyms.—*Molluscum sebaceum*; *Molluscum sessile*; *Fr.*, *Acné varioliforme* (Bazin); *Molluscum verrucosum* (Kaposi).

Definition.—Small sessile or pedunculated, gland-like tumours of a pearly white or pinkish colour, which are formed in the rete.

This disease is not very common in England, and it appears to be quite rare on the Continent and in America, though it is doubtless more common than dermatologists' statistics suggest, 2 in 1,000 in my practice. It is common about the genitalia of prostitutes and of those who cohabit with them, and are very likely to be aggregated into masses on the thighs.

Symptoms.—The tumours are nearly always multiple, varying in number from two or three up to many scores, and in size from a small pin's head to a large pea, the average being one-eighth of an inch. They are of firm consistence, nearly hemispherical in shape, but flattened on the top and usually umbilicated, while in the larger ones there is a small central hole, leading to the interior of the tumour, through which milky fluid or a solid waxy mass may be expressed. At first they are sessile, pearly, or waxy-looking, but as they grow larger, the contents become more opaque and yellowish, while the skin over them is of the normal hue unless from vessels coursing over them, and they may become more or less pedunculated. They are usually discrete, and the commonest positions are the face, neck, scalp, breasts, and genitalia. They may form anywhere, but are very rare on the palms and soles.† They begin as only just perceptible elevations above the skin, grow slowly, and after attaining to their full size, may remain unaltered for a long time, or they may inflame, suppurate, discharge their contents, and disappear, perhaps without leaving even a scar.

* Author's Atlas, plate lvii., figs. 1 and 2; the last shows a suppurating tumour. Sydenham Society's Atlas, plate xlv., on face and breast. Kaposi's Hand Atlas, plate 226, on the penis and scrotum. St. Louis Atlas, plate xlii. on the vulva.

† Balzer and Alquier record a case on the sole. *Annales de Derm.*, vol. i. (1900), p. 528.

Hutchinson says that in a month or two they disappear spontaneously, but this much understates the duration. (*Vide* Prognosis.)

Variations.—A few cases of *molluscum giganteum* are recorded by Hebra, Virchow, Laache,* Walter Smith,† and E. Wilson respectively. In Laache's case, the tumour was single, grew from the occipital region, and was the size of two fists; but the microscope proved that it was a *molluscum contagiosum*. Confluent molluscum without much elevation is rather more common. In a case of Hallopeau's, there were plaques on the back of the left calf, the largest two inches by one and half, but raised up only one-eighth inch.‡ C. Fox showed a case to the Dermatological Society in May, 1902, an elderly woman; on the right temple was a cerebriform mass formed by aggregation of tumours, each about the size of a hazel nut. There were some of the usual size and character near and in other parts, but some of the larger tumours had no central orifice, and had vessels coursing over them, so that by themselves they would not be recognisable. White opaque fluid could be squeezed out of those with an orifice. Another form that I have seen is the very opposite of this; on the back of the wrists and over the knuckles of the left hand, in a woman, æt. eighteen, were congeries of tumours from a pin's head to a hemp seed in size, the larger tumours being generally compound. They were distinctly raised above the surface, obtusely conical, with a flat top, of a violet hue due to dilated vessels at the periphery, while the central part was of a yellowish-white colour, due to a friable plug, which could be squeezed out with moderate pressure, while the whole contents could be evacuated with strong pressure. In the compound tumours, there were two or three plugs, while in the scattered ones, of which there were a few on the back of the right hand, and also upon the face and the angle of the mouth on the right side, there was only one such plug. A small piece of skin containing three small tumours was excised, and microscopical examination showed it to be of

* Abstract in *Amer. Jour. of Cut. and Ven. Dis.*, February, 1885, p. 64.

† In W. Smith's case, the tumours were very numerous and general, and one was three inches and a quarter by three inches. *Dub. Jour. of Med. Science*, November, 1878. He also quotes E. Wilson as having had a case where the tumour was three and a half inches in diameter.

‡ *Annales de Derm. et de Syph.*, vol. x. (1899), p. 134, quotes cases of Alibert, Vidal, and Kaposi.

molluscous structure, with a single, flat, flask-shaped, acinus-like downgrowth of the rete, containing a plug of altered rete cells like molluscum bodies, while there was slight leucocytic infiltration in the corium round the tumour. Some of the growths were touched with the acid nitrate of mercury; a vertical incision was made into the rest and the contents squeezed out, and there was no return of them.

A peculiar case, with many of the characters of molluscum



Fig. 34.—Peculiar form of molluscum contagiosum with a single acinus, formed from an outgrowth of the rete mucosum, with central plug of molluscous material.

contagiosum, but also with many differences, is recorded by Payne.* There were in the papules, bodies structurally like psorosperms, but they were really altered epithelial cells.

Etiology.—They are much more common in children than in adults, in the poor than in the rich, and it is said, in females than in males. Most English authorities agree that the tumours

* *Brit. Jour. Derm.*, vol. iii. (1891), p. 250.

are contagious, while in Germany* and in America† the contagious theory is not so generally accepted. There are many cases where prolonged contact has apparently imparted the disease, *e.g.*, mollusca appearing on the face of the sucking infant and on the breast of the mother, and it is not a rare event to meet with several cases‡ in the same family. The failure to convey the disease by artificial inoculation does not prove that it is non-contagious, as many vegetable parasitic diseases, admittedly contagious, cannot be propagated at will; while Patterson, Retzius, Vidal, § Stanziale, Pick, Haab, and Nobl have been successful in their inoculations, || though with many failures. In Pick's two cases the first sign of the lesion took ten weeks to manifest itself, and Nobl's was nine weeks before they were distinctive.

Turkish baths ¶ are said to produce the disease, but they merely offer favourable conditions for the contagium.

Salzer** records the case of a lady with molluscum contagiosum, in which it seemed probable that she had contracted it from pigeons which she was in the habit of feeding. The birds died of an epidemic disease which produced emaciation with growths on

* Caillaut relates that in a children's ward of thirty beds, fourteen were affected with this disease, which began from a single case (*On Diseases of the Skin in Children*, second English edition, p. 78).

† Mittendorf of New York has reported two extensive outbreaks in asylums for children. Allen also records fifty cases in a children's asylum. Stelwagon and Graham have also reported outbreaks.

‡ See Duckworth's paper on cases favouring the contagious theory (*St. Bart.'s Reports*, 1868, p. 211).

§ Model 515 in the St. Louis Museum, showing a successful inoculation on an infant's arm.

|| Stelwagon, *Jour. of Cut. and Gen. Ur. Dis.*, vol. xiii. (1895), p. 50, "The Question of Contagiousness of Molluscum Contagiosum," gives full references.

¶ I have seen several such cases: one, a gentleman, had numerous mollusca on the nape and back of the poll, where it had been in contact with the wooden head-rest at the Turkish bath; in another, a lady, many scores of translucent pearly mollusca were scattered all over the back; she had lain on the felt-covered benches without any intervening cloth. In the third, a lady who took a Turkish bath every other day, but in her own house, the mollusca were numerous on the trunk and arms. The skin on and round the tumours was red, and they were pruritic. The source of infection was her own son, who said that many of his schoolfellows had similar "warts." Hutchinson says that all his male cases were frequenters of the Turkish baths; he suspects the towels or gloves.

** *Münch. med. Woch.*, Sept. 8th, 1896, p. 841. Abs. *Brit. Jour. Derm.*, vol. ix. (1897), p. 173.

the beak, said to be epithelioma contagiosum of fowls. Hutchinson has recorded a case in which a woman contracted the disease from her dog; in the latter it was proved microscopically. Shattock* has observed it in bunting.

Pathology.—It is now generally agreed that the lesions are derived from the prickle cell layer of the epidermis by the accumulation of altered epidermic cells, and the hyperplasia produced by the irritative presence of these cells or the original hypothetical infective organisms. The nature of the degenerative change which produces “the molluscum body” has been much disputed hitherto. The idea that it was hyaline or colloid gained most support; but Charles J. White, the most recent observer (April, 1902), states positively that it is “normal keratin,” thus confirming Piffard’s observation that these bodies react to polarised light like corneous epithelioma. The change may start in the cells of the hair follicle as well as in the rete independent of them, but the old view that the tumours are metamorphosed sebaceous glands, has scarcely any supporters. The organism which produces the change is still undiscovered. The psorosperm theory was soon exploded.

Anatomy.†—When a vertical section is made through the centre of a small well-developed tumour, it is seen to consist of wedge-shaped lobules, all converging towards a common centre, the central being the smaller end; between each lobule is a very thin fibrous septum, and the whole is enclosed in a fibrous capsule, incomplete above, with its base in the corium. While the border is continuous with the epidermis, each lobule is bounded by palisade epithelium, and round, nucleated epithelium lies adjacent, but even in many of the lowest cells, the molluscous degeneration has commenced. This consists of a change which renders the cell substance opaque, white, and homogeneous, like amyloid degeneration, and this gradually encroaching on the cell substance ultimately fills up the cell, enlarging it, obliterating its structure, and making it quite homogeneous, and it is then the so-called “molluscum body.” These bodies accumulate at the mouth of the lobule, and with those from the other lobules form a yellowish mass, which does not stain with carmine or other dyes, and the horny layer over it giving way, some of this mass often falls or is squeezed out, and the hole that is usually described at the mouth of the follicle is formed. The resemblance to gland structure is very complete, and the old view was that the tumour was merely an enlarged and changed sebaceous gland.

Virchow first put forward another view, viz., that the disease is in the Malpighian layer, and he thinks that the disease begins in the hair follicles; the observations of Boeck, Lukomsky, Piffard, Sangster and Thin, etc.,

* Shattock’s paper on Avian M. Contagiosum should be referred to, *Path. Trans.*, vol. xlix. (1898), p. 394.

† *Unna’s Histopathology*, p. 794. Unna is strangely in error in classing me

confirm this view, and I can endorse it for some tumours, but it is only by examining them in the early stage that this can be made out. Another proof that they are not sebaceous gland structures is that they have been observed on mucous membranes (Colcott Fox and Abraham on the tongue). The following description is from my own observations. Taking a tumour at the earliest period recognisable, when it is only about the size of a pin's point, a vertical section shows the molluscum bodies accumulated in a small mass at the top of the rete; and in the granular layer, below this, there is only a partial change in the rete cells, and it gets gradually less until they are quite normal, or only a very few of them adjacent to the boundary of the palisade cells are affected; the inter-papillary processes are already enlarged, both vertically and laterally, and the papilla is thus narrowed and elongated, but as yet there is no sign of gland-like structure. The most striking feature is the small accumulation of altered cells at the surface, and it is evidently a rete change. Many sebaceous glands and hair follicles are quite healthy, but in some of the hair follicles the cells present the same alteration, the process being always most advanced close to the shaft (fig. 36). Taking next a tumour slightly more advanced, as in fig. 35, it is found to consist of wedge-shaped lobes separated by a fibrous septum, formed by the compressed papilla, elongated by the continued downgrowth of the rete; in the centre of the tumour are molluscum bodies, compressed above, so that the outline of the component cells is indistinct or lost, and if the section has been made through the centre of the tumour, the rete is seen to be continuous from the surface to the deepest part of the tumour, forming a flask-shaped depression, bounded by the palisade cells giving the appearance of the formation being due to an inversion of the whole epidermis, and the fibrous septa are the obliterated papillæ. Thin considers that the molluscum change commences in the cells of the upper layers of the rete; Campana, that it begins in the stratum granulosum; I think it begins at the deep part of the rete, and increases as the cells progress to the surface; while Lukomsky asserts that molluscum bodies are derived from leucocytes.

The change in the rete cells which results in the formation of the so-called "molluscum bodies" is, according to Török and Tommasoli, a hyalin or colloid change, and Unna says that it only occurs in the central portion of the prickle cell, while the normal keratinisation takes place at the periphery. The latest observations are those of Charles White,* who has made a careful examination by modern methods, but, from the context, apparently not on the smallest tumours. Like myself and others, he found the change increasing from below upwards. The septa between the component lobules of the tumour consist of keratin. There was an empty

among those who do not believe in the origin of the change in the prickle cell layer. Though I do think it can be proved to start in many growths, in the prickle layer of the hair follicle. I stated in my 1893 edition that it also arises in the rete, apart from the follicles.

* *Molluscum Contagiosum*, by Charles J. White and William H. Robey. Reprint from *Journal of Medical Research*, vol. vii., No. 3, April, 1902, pp. 255-277. References to date and general review. White follows Unna in misrepresenting me as a believer in the glandular origin of the tumour.

perinuclear space in the Malpighian and granular cells, and inflammatory reaction round the tumour with colloid (?) degeneration. The molluscum bodies, he was satisfied, consisted of normal keratin. His co-worker, Robey, could find no organism except the staphylococcus epidermidis albus of Welch, and they express the opinion that so far it is undiscovered, and in my opinion it never will be found unless the earliest stages are investigated.

Diagnosis.—The small sessile or slightly pedunculated, solid tumours, with their central depression, once seen would scarcely be mistaken, but when numerous and pearly they are very like vesicles, such as those of varicella. In exceptional cases it may

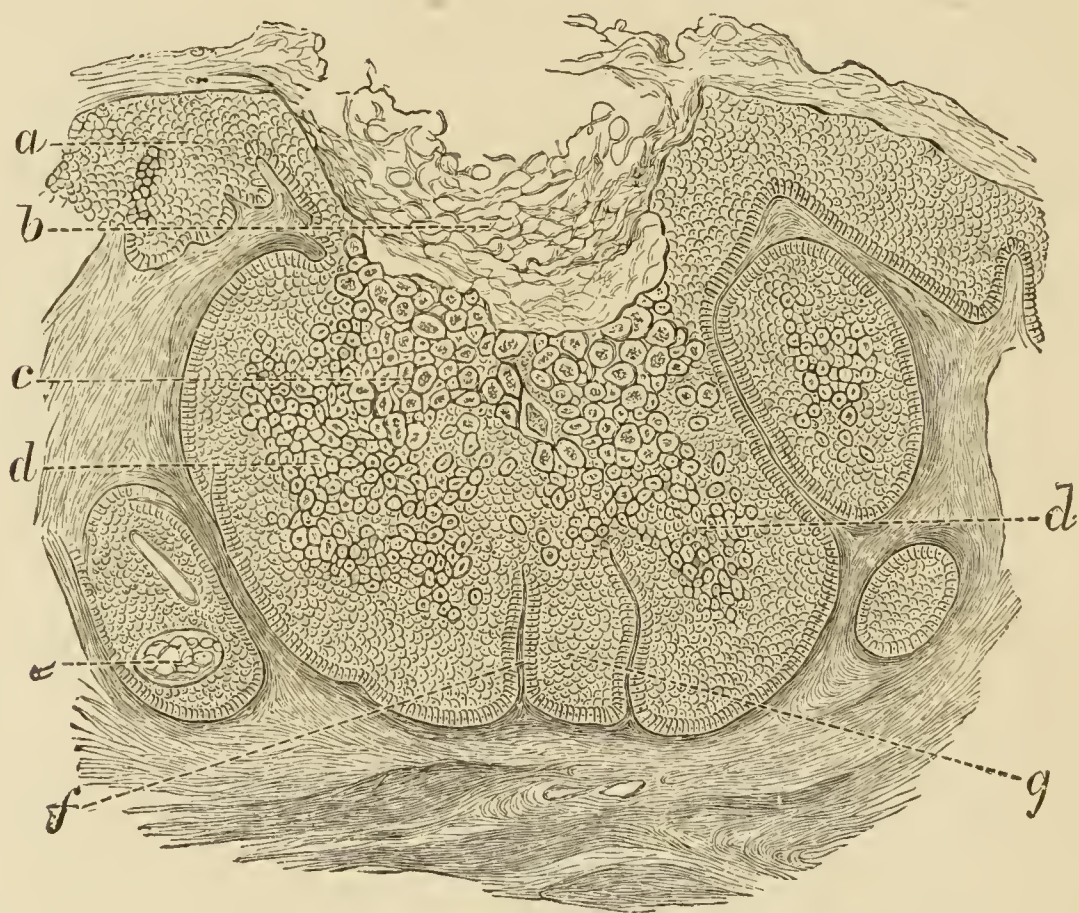


Fig. 35.—Section through the centre of a very small tumour of molluscum contagiosum just perceptible to the naked eye. $\times 125$.

a, rete mucosum continuous with the tumour; *b*, plug in centre of tumour formed by an accumulation of molluscum bodies; *c*, cells of the rete in process of conversion into molluscum change; *d*, *d*, cells in an earlier stage of conversion into molluscum bodies; *g*, pseudo-lobe of tumour formed by vertical and lateral growth of the interpapillary processes; *f*, fibrous septum between lobes of tumour formed by compression of papilla; *e*, sebaceous gland of small hair follicle.

also simulate other eruptions, thus Abraham* met with a case where some of the lesions were very like lichen planus; Pringle,† where some of them on the scalp were like a rodent ulcer, and

* Abraham, *Brit. Jour. Derm.*, vol. xi. (1899), p. 474. The tongue was affected simulating large patches of leucoplakia, but really made up of papules.

† Pringle, *Brit. Jour. Derm.*, vol. x. (1898), p. 418.

Kaposi's case* was like a bromide eruption, and this it probably was. A fungating growth at the angle of the mouth of a boy was referred to me as a possible chancre, but there was no adenitis, and a small characteristic lesion was found on the chin. The difficulty can generally be got over by a careful examination of all the lesions, when probably some would be characteristic, and the molluscum bodies could be found by the microscope. In the varicella-like form, the duration and the effect of pricking, which would show them to be solid, would prevent error.

Prognosis.—While no doubt cases do sometimes get well spontaneously, it is usually much more than the month or two mentioned by Hutchinson. I have had cases of nine, ten months,

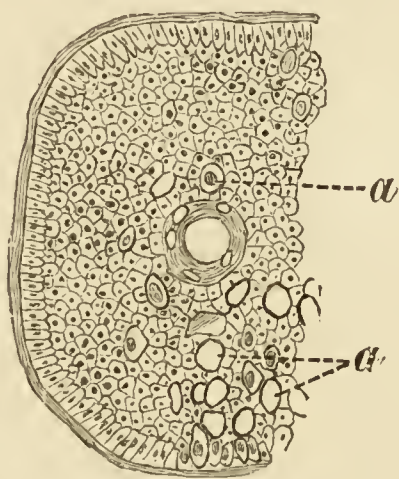


Fig. 36.—Transverse section of a hair follicle in an early stage of molluscum contagiosum. $\times 550$.

a, a, epithelial cells showing molluscum change.

and more. Walter Smith's giant form dated back thirty years, and there had been no fresh ones for fifteen years or more. Another case in his table was one and a half years. The short duration of the majority of the cases is probably accounted for by the fact that advice would be sought in most cases as soon as the lesions became conspicuous.

Treatment.—This is simple and effectual. The tumour should be split from below upwards with a sharp knife, and pressure being

* Kaposi, *Annales de Derm. et de Syph.*, vol. vii. (1896), p. 1385. Rep. Vienna Derm. Soc. and plate 226 of his Hand Atlas. The patient was a suckling, *æt.* six months. The eruption was very extensive, had been developing for six weeks, and fresh attacks appeared in a few hours. The lesions were exactly like those of bromide. Examination for molluscum bodies was negative except on a lesion on the throat. Bromides are so frequent in quack medicines that a negative history on the mother's part does not count for much.

made at right angles to the incision with the thumb nail and handle of the scalpel, the contents are readily evacuated; rather free bleeding is easily stopped by a pad of lint. Some recommend that the interior should be touched with nitrate of silver, but it is unnecessary; others dispense with the incision, but this is almost painless, and the extra pressure required to empty the tumour without it, gives much pain. Very small nodules may be touched with the end of a match dipped in the acid nitrate of mercury or ethylate of sodium.

These or similar applications should be used for very young children, for while the pain of expressing them is slight for an adult, it is serious for the young, especially when the lesions are numerous. Hallopeau recommends tincture of iodine to be introduced into the tumour by the pointed end of a match. The tumour dries up and shells off more quickly if some of the contents are squeezed out before the iodine is introduced.

XANTHOMA.*

Deriv.—*ξανθός*, yellow.

Synonyms.—Xanthelasma; Vitiligoidea; Molluscum cholestérique (Bazin); Fibroma lipomatodes (Virchow).

Definition.—A fibro-fatty neoplasm forming yellow plates or nodules in the corium.

Xanthoma is not a common disease under any circumstances, but the cases in which it is limited to the eyelids (*X. palpebrarum*) are much more frequently met with, than those where the lesions are more generally distributed (*X. multiplex*). Most of this latter form are of congenital origin in the young, and connected with jaundice or glycosuria in adults.

* *Literature.*—Author's Atlas, plate lviii., illustrates palpebral, nodular, and congenital forms. St. Louis Atlas, plate viii., illustrates *X. planum* in large plaques. It is not a case of *X. diabeticorum* though glycosuria was present. Pye-Smith, *Guy's Hospital Reports*, 1877. Hutchinson, "Clinical Report on Thirty-six Personal Cases of *X. palpebrarum*," *Med. Chir. Trans.*, vol. liv. (1871), p. 171 (some of the statements require some modification in the light of further experience). Gendre, *Paris Thesis on Xanthelasma*, 1880. Report of Xanthoma Committee of the Path. Soc. on Startin's and Mackenzie's cases, vol. xxxiii. (1882), p. 376. In the same volume is a very complete *résumé* of the clinical facts up to that date, with tables of *X. multiplex* cases.

It occurs in two forms, in plates (*X. planum*), and in nodules or tumours (*X. tuberculatum* or *tuberosum*); they represent little more than differences in position, shape, and degree of development.

Symptoms.—*Xanthoma palpebrarum* constitutes the great bulk of the cases, and is almost always in plates. It usually commences on the internal canthus of the left upper eyelid, and by the gradual coalescence of several patches, sometimes forms a semicircle round the eye. Sooner or later, similar patches appear on the right side, the disease being always symmetrical if it has been present long enough, though the left side is naturally more advanced in development. The plates are imbedded in the corium, very slightly or not at all raised above the surface, of a chamois-leather-yellow colour, which becomes more distinct when the skin is stretched, of irregular outline, but tending to be elongated, from about an eighth of an inch to one inch in their long diameter, quite soft and smooth to the touch, and the skin does not seem thickened when pinched up. With a lens, the patches can often be seen to consist of an aggregation of small yellow granules, which usually have a central pinkish punctum.

The nodules are of the same colour as the plates, project more or less above the surface, and as a rule are from a millet seed to a large pea in size, but may even be as large as a small apple. The small ones are convex, roundish, or oval, often have fine tufts of vessels over them, and are quite soft and smooth to the touch. The larger tumours, being compounded from the smaller ones, are irregular in contour and of more or less firm consistence, according to the amount of connective tissue they contain. Unless there is jaundice present, the skin round and between both nodules and plates is quite normal.

X. multiplex in the adult, is most frequently associated with jaundice of long standing, and the lesions are both in plaques and nodules. Its distribution may be very wide, affecting not only the skin, but also the mucous and serous membranes and the tendons. The most common positions are the eyelids, where it generally commences, the palms and soles and backs of the hands and feet, especially the knuckles, the elbows, knees, buttocks in and near the cleft, and round the anus, and the flexures generally.

The plaques are most frequently found on the eyelids, flexures, and mucous membranes, and the nodules on the extensor as-

pects, especially on parts exposed to irritation, like the knuckles, elbows, and knees. Symmetry is observed in multiple as well as in eyelid cases, and the limbs are much more involved than the trunk.

As a rule, the disease gives rise to no inconvenience except from its disfigurement or position ; sometimes, however, burning, pricking, or itching has been experienced, and occasionally the sight has been interfered with by the new growth overhanging the eye, or by its size interfering with the movement of the eyelids, and when it is on the palms or knees, grasping or kneeling may be attended with discomfort, or even pain.

In most instances, the lesions appear gradually, and increase slowly by aggregation ; then after months or years, development ceases, and there is no further alteration ; in three instances, however, involution has spontaneously occurred after several years, without any pigmentation or scarring being left, and in one other case, apparently as the result of treatment.

Variations.—The plane form may be seen in lines or striæ, especially in the flexures and on the palms and soles ; in papules and macules as well as in plaques, and accordingly some authors give names to all these forms, such as **X. lineare vel striatum**, **X. maculatum et papulatum**, representing for the most part early lesions of which the patches are formed. Then some would make a **X. tuberculatum** for the smaller and **X. tuberosum** for the larger tumours, but these are unnecessary refinements. The colour is not always like chamois leather ; it may be of any shade of yellow, from yellowish-white upwards, and a certain amount of blackish pigment may, in rare instances, be seen in the lesions. Abercrombie showed me a case at the Charing Cross Hospital due to jaundice, in which, along with the ordinary lesions, the front of the neck and lower lip formed one large area of a dirty, slightly yellowish-white colour. There was no perceptible elevation or thickening of the skin, but the natural depressions were exaggerated like orange peel. The less common positions for *X. multiplex* on the skin are the ear, neck, back, and chest ; in Hardaway's case, the lesions were distributed like zoster over the ninth and tenth rib-spaces of the right side, the prepuce, glans, and other parts of the penis and scrotum, and under the nails. It has been observed on the mucous membranes of the cornea and conjunctiva, the sides of the tongue, the angles, roof and floor of the mouth, the palate,

pharynx, larynx, trachea, bronchi, œsophagus, capsule of the liver and spleen, the peritoneum, round the rectum, the lining of the bile ducts, and the inner coat of the arteries and on the sheaths of tendons, such as the Achilles tendon and those of the extensor aspect of the fingers. Then the lesions may first appear on, and even be restricted to, unusual positions, such as the outer canthus, the cheek, the side of the neck, nates, the root of the penis, and the heel and soles; and X. multiplex has begun on the elbows, the flexures of the fingers and palms, and appeared on the eyelids subsequently; in Robinson's case, it came in a large patch on each elbow, and did not affect any other parts. This irregularity of distribution is more common in children and in congenital cases. In Köbner's case, a man, æt. twenty-seven, on the other hand, the tumours were reddish-brown or reddish-violet, and situated in lines along the axillary folds and in the axillary region generally; their colour was due to their development in capillary nævi, of which there were a large number besides the X. nodules; it began when two years old, the mother said. Besides this association with vascular nævi, Köbner records a case which was associated with fibroma, and Hutchinson one with fusiform enlargement of many tendons. The case of Startin junior, a child, also had fibroid thickening round the joints, with xanthoma chiefly round the anal cleft and on the limbs.

Children.—When the Xanthoma Committee published their report (1882), only eight* cases were known. Their statements were to the effect that cases before puberty are structurally the same as adult cases, but etiologically different, having no traceable connection with hepatic disease, but are in some cases, probably hereditary, in some congenital; that the eyelids always escape, that the eruption is always multiple, and that there is a great tendency to nodules. Many cases have come to light since this, which modify some of these statements. In the case of Vincentiis,† a girl of twenty, it began when five years old without apparent cause, affected the eyelids, shoulders, and hands, in plaques and nodules. In a case of Hutchinson's‡ the disease began on the middle of the eyelids, and soon after on the ear lobes as large as

* Török collected thirty cases up to 1893.

† Quoted by Chambard, with critique of histology, in *Ann. de Derm. et de Syph.*, vol. v. (1884), p. 81.

‡ *Archives*, vol. ix., p. 201.

a finger-tip. In a case of Barlow's,* congenital, but with subsequent development, in a boy nearly seven years old, it was also on the eyelids in patches, and there was yellow pigmentation on the lobes of the ears and elsewhere. In a still more remarkable unpublished male case of his, which I saw, the disease began when a year old, without known cause, in the right upper eyelid; at six years old, the lesions were in patches and nodules, surrounded both orbits, and were deeply pigmented, of a dull dark brown colour in the greater part, and dull yellow in the rest; there were more typical lesions in other parts of the face, and on the back of the forearms; the child presented some signs of hereditary syphilis, and had an enlarged liver and spleen. Jackson's case† was remarkably extensive and very symmetrical, the eyelids, especially the right, were much affected, and no part, except the hands, feet, and scalp, was quite free; it was said to have commenced when three months old. Köbner's case‡ began at two years old on a vascular pigmented nævus in the right axillary region. When Köbner saw him he was aged twenty-seven, and the growths, which were numerous and in rows on the axillary folds, were from brownish-red to violet, sprinkled over with yellow papules. There had been some lesions in the left axilla, but they had flattened down to reddish-brown spots. In spite of their colour the histology showed that they were xanthoma. There were also numerous vascular nævi, the size of a pin's head, in the lower axillary region.

Gwynne of Sheffield had a case of a boy, æt. nine, in whom the disease began when four years old, first on the elbows, then over the tendo Achillis, on the web of the fingers, and on the ears. There was nothing in himself or in his family history to account for it; the lids were not affected, but they were in Letzen and Knauss's case, § which also began when four years old on the eyelids, after suffering from many widespread abscesses, and, as in Startin's case, the nodules were abundant on the borders of the anal cleft.

* *Path. Trans.*, vol. xxxv. (1884), p. 405, with coloured plate.

† *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. viii. (1890), p. 241.

‡ Köbner, *Viertelj. f. Derm. u. Syph.*, vol. xv. (1888), p. 393 (coloured plate).

Abs. in *Annales de Derm.*, etc., vol. i. (1890), p. 359.

§ Virchow's *Arch.* vol. cxvi. (1889), Heft i., with plate.

In a case reported by A. Pönsen,* a boy, æt. twelve years, the eyelids escaped, the limbs were chiefly affected, and the disease, which began when he was ten years old, was associated with aortic stenosis, rheumatic nodules, and fatty tumours.

In a man of twenty-three, recorded by Thibierge,† the tumours were enormous, they began at eight years of age, and his brother also had the disease. I have met with a very similar but not quite so highly developed a case in a youth, on whom it had commenced, at the age of fourteen, simultaneously on the elbows and knees. A brother was slightly affected.

In a case of my own, a healthy boy of two years, there was a single oval yellow nodule, five millimetres long, on the left lower eyelid, which had been growing six months; it was excised, and proved to be of the usual structure.

In another case, a boy of six, brought to the Shadwell Hospital for articular rheumatism, there was a smooth flat patch on the middle of the right eyelid, of a buffy-white colour, and made up of slightly raised, soft, millet-seed-sized granules.

I have also met with a yellowish-white patch, exactly like xanthoma, imbedded in the tongue near the tip, to the right of the raphé, in a female infant, æt. three months; it was first noticed when the child was two weeks old, and was most likely congenital.

Probably, therefore, slight developments of xanthoma are not so rare in children as is generally supposed, but give no trouble and are overlooked. It is noteworthy that in all these three cases, the lesions were unilateral.

Etiology.—The etiological relations are the most interesting features in the disease, but it is essential to consider eyelid apart from multiple cases, and those occurring before puberty from those after that period. Taking *X. palpebrarum* first, it is certainly more common in females than males, but owing to these and multiple cases being mixed up in most statistics, it is impossible to state in what proportion; Hutchinson's thirty-six cases make it three to two. Most cases begin over forty years; the extremes, excluding children, are twenty to eighty-four (Hutchinson). The disease shows remarkable family prevalence, and may be hereditary. In

* Virchow's *Arch.*, February, 1883, with *résumé* of whole subject of xanthoma, and extensive collection of cases.

† *International Atlas*, plate xli., with histology by Darier.

Church's series one male out of five, and out of twelve females who had reached the age of forty, three of the first generation and two of the second were attacked. Hilton Fagge mentions an instance in which mother and daughter were affected, and the disease had existed for four generations in their family; and Török, in which it affected three generations. It may also skip a generation; thus Hutchinson records an instance of two brothers and their paternal grandmother having it.

Of other conditions, dark-complexioned people, and those with a tendency to deep coloration about the orbit, are certainly more liable to it, but migraine is the most important factor; half of Hutchinson's cases suffered from it. Gout and perhaps ovarian disturbances are answerable for a certain number; and hepatic derangements, especially such as lead to jaundice, are frequent, one-sixth of Hutchinson's cases having suffered from jaundice; at the same time it is much less frequent than in *X. multiplex*. In one case I met with, there was diabetes insipidus with some gouty tendency.

In *X. multiplex*, in those above puberty, four-fifths of them are associated with chronic jaundice, which has been due in different instances to stricture of the duct, gall-stone, hydatids, cancer, red atrophy, and hypertrophic cirrhosis. It would seem, therefore, that jaundice is the chief cause, but in what way is not apparent, possibly a toxin is the real factor. According to Besnier* and Gailleton, there is a **xanthochromia** of the skin, not due to jaundice in some cases. It is more marked on the face and trunk than on the limbs, but the conjunctivæ and buccal mucous membranes are uncoloured, and there is no bile in the urine and fæces.

In cases, without jaundice, including one of my own, there has been in some a history of migraine, and the sister of my case had eyelid xanthoma on the right side and migraine; another had syphilis; and there was no obvious cause in the other three. The cases associated with diabetes mellitus present many peculiarities, and are described separately.

Xanthoma below puberty is still rarer than after it, less than forty cases being recorded. It is not associated with jaundice as

* Besnier, Hallopeau, and Kaposi regard the jaundice and visceral troubles as secondary, and due to the xanthoma process in the viscera. The clinical order of development of most cases does not support this view.

a rule, but shows a family prevalence; eight out of thirty cases Török found in four families. It is occasionally congenital and hereditary, and in several instances a rheumatic and gouty inheritance has been present.

Pathology.—The process in *X. tuberosum* is essentially that of a connective tissue neoplasm in the corium, whether inflammatory or not is disputed, in the meshes of which lie large epithelioid, fattily degenerated or infiltrated cells, or, as some say, masses probably derived from the connective tissue elements, while yellowish-brown pigment is deposited in the rete. For my part, I consider inflammation as the primary feature, and the xanthoma cells and the connective tissue growth secondary, and the whole process of toxæmic origin. Köbner thinks the lesions are derived from embryonic remnants, and the view that they are closely allied to non-vascular nævi finds advocates in Hallopeau and others, and explains well the juvenile cases which are sometimes associated with other forms of nævus.

Török concludes that the xanthoma plaque is composed of adipose cells interrupted in their progress to complete evolution, and that it is not a tumour, but an excess of growth.

Unna says that the fat in *X. palpebrarum* is a sort of fatty infiltration of the orbicularis muscle, the fat being in the lymph spaces, and the giant cells being sections of dilated lymphatics. Pollitzer follows Unna, and says that the eyelid lesion is a different process altogether to the nodular form; it is the product of the degeneration of embryonically displaced muscle fibres. Previously the differences have been regarded as only due to the predominance of connective tissue growth in the nodular form; and against Pollitzer's view is the clinical fact that both in adults and children it is not unusual for the disease to begin in the eyelids and then spread all over the body.

Darier, who examined the large tumours of Thibierge's case, came to the conclusion that it was a perivascular, and consequently convoluted, neoplasm. The xanthomatous matter was contained in the cells (differing from Unna's view) which are derived from the connective tissue cells. The giant cells were very numerous except in the sub-epithelial zone. The tumours showed all the characteristics of xanthoma, and it is unusual to find them all in one tumour.

Anatomy.—The anatomy has been investigated by myself, and by numerous

observers, of whom Chambard,* Balzer,† Touton,‡ Török, Unna, Poilitzer,§ etc., have made the most complete examinations. According to Chambard, there are two processes going on, an increase of connective tissue and a fatty degeneration or deposition, the results of a chronic inflammatory process, in the soft plaques the fatty change, and in the nodules the connective tissue growth predominates, being greatest in the larger and firmer ones.

Touton disputes these simultaneously progressive and retrogressive processes; he regards xanthoma as non-inflammatory, and as a veritable new growth, composed of elements which are not normally present in the corium. The "xanthoma cells," which he says are infiltrated with fat from the first, have a distinct membrane, finely granular or fibrillated contents, and large round or oval nuclei. He thinks there are mixed tumours, such as fibro-



Fig. 37.—Large xanthoma plaque from eyelid. 2-in. oc., $\frac{1}{4}$ -in. obj.

a, rete Malpighii, many of the cells of which are undergoing vacuolation as at *e*;
b, cylindrical masses of xanthoma cells formed round a vessel; *c*, hair follicle;
d, large multi-nucleated granular xanthoma cell.

* Chambard, "Des formes anatomiques du xanthélasma cutané," *Archives de Physiologie*, 1879, p. 641, with plates.

† Balzer, "Recherches sur les caractères anatomiques du xanthélasma," *Archives de Physiologie*, 3me serie, 1884, p. 65.

‡ Touton, "Ueber das Xanthom insbesondere dessen Histologie und Histogenesis," *Viertelj. f. Derm. u. Syph.*, vol. xii. (1885), Heft i., p. 3, with plates and full references to previous observations.

§ Pollitzer, "The Nature of the Xanthomata," *New York Med. Jour.*, July 15th, 1899. L. Török, "De la nature des Xanthomes," *Annales de Derm. et de Syph.*, vol. iv. (1893), November and December, and p. 50, vol. v. Unna's *Histopathology*, p. 945.

sarco-myxo- and cyst-adeno-xanthomas, and that there is cystic transformation of the confluent destroyed xanthoma cells. L. Dore thinks that there are also myelo-xanthomas, and that the cells of each have a common pathogenetic origin. No one accepts Balzer's parasitic infective theory, which does not at all accord with the general facts; moreover, the specimens were taken twenty-four hours after death. I examined a large plaque from the eyelid of a woman, who was a martyr to migraine, and had *X. multiplex* without jaundice then, though it developed subsequently. I found large epithelioid, multi-nucleated, oval, roundish, or polygonal, finely granular cells in a fine meshwork of connective tissue. In very fine sections, each cell can be seen to lie in a mesh of connective tissue, the cells being either in irregular masses, or in many instances arranged in whorls or nests round a centre, this arrangement being due to their formation round a blood vessel. The



Fig. 38.—A small nodule of xanthoma tuberosum from the elbow, showing that the lesion is situated almost entirely in the papillary layer, pushing up the rete into a nodule. Almost the whole morbid area is made up of epithelioid cells. \times 1-in. Ross, 2-in oc.

individual cells vary much in size, have a defined outline; are finely granular, with from one to half a dozen or more nuclei (see fig. 37).

The process is chiefly in the middle and lower layers of the corium, through which yellowish-brown pigment is scattered, both free and in cells, the papillary layer being almost normal. There is also a certain amount of deposition of yellow pigment granules in the rete cells, a large proportion of which show vacuolation in a varying degree. This structure agrees with that described by Touton. The origin of the cells in *X. palpebrarum* is traced by Pollitzer to degenerated muscle cells, while he admits that *X. tuberosum* and the lesions of *X. diabeticorum* are both connective tissue neoplasms, in which the relative proportion of fibrous tissue and connective tissue cells varies in different cases. In both, the cells undergo fatty degeneration, resulting in the destruction of the cells, and ultimately in the more or less complete disappearance of the nodule.

In the nodules, the process is more superficial; the bulk of the lesion,

being situated in the papillary layer, pushes up the epidermis above the level of the surrounding surface. The connective tissue is increased, distributed in foci, and in greatest abundance round the hair follicles and sebaceous glands; the fatty masses are less conspicuous, but yellow oil globules infiltrate the meshes between the fibrous tissue. Chambard also found peri- and endarteritic and perineuritic thickening, but probably this is only present in the nodules in which the connective-tissue increase is considerable (Darier).

Xanthoma Elasticum (Balzer),* or **Pseudo-xanthoma Elasticum**. Balzer described a form in which the elastic tissue was in numerous large coils, chiefly round the follicles, and formed the greater part of the tumour. The fibres were swollen, degenerated, and in parts broken into and segmented. In Balzer's case, the lesions began in early infancy, and were flat and pale yellow, sometimes papular, and were widely distributed in the folds of flexion. Besnier and Doyen† quote another case by Chauffard with very similar features, Besnier comparing it with X. diabetorum. The eyelids were free in both cases. Darier's‡ microscopic examination was made on material from this case.

He confirms Balzer's observations with regard to the elastic fibres, but considers it a different disease to xanthoma, as xanthoma cells and fatty granules were absent. Bodin§ has published a third case, a man of fifty, in whom the skin affection had existed for thirty years without inconvenience. There was a palm-sized median patch below the umbilicus, and others strictly symmetrical in the mid-clavicular region, the anterior fold of the axilla, the inner central part of the arm; the upper and flexor aspect of the forearm, and the upper and inner part of the thigh. The eyelids and other usual positions of xanthoma were free and the mouth was unaffected. In the centre of the patch the individual lesions were confluent, but were discrete in normal skin at the periphery, where they varied, and in size from a pin's head to a pea. They looked like little yellow masses of butter beneath the normal epidermis. In this patient, like the other, there was advanced lung tuberculosis, and neither hepatic nor diabetic symptoms. Bodin confirmed Darier's observations, and considered the process due to a degeneration of elastic tissue; the giant cells, he observed, were quite different from true xanthoma cells, consisting of masses of nuclei imbedded in very little protoplasm. The resemblance, therefore, is only a clinical one. Clinically, the quite different distribution, the absence of hepatic and renal disease, and the flatness of the lesions are the chief points of distinction from true xanthoma. Payne has described a generalised xanthoma with abundant elastic tissue, but in his case regarded the excess as only relative to the atrophied connective tissue.

Diagnosis.—The presence on the eyelids of chamois-leather-

* Balzer, *loc. cit.*

† Besnier-Doyen's Kaposi, vol. ii., p. 336.

‡ Darier, *Third Internat. Cong. Rep.*, 1896, p. 289; Unna's *Histopathology*, p. 953.

§ Bodin, *Annales de Derm. et de Syph.*, vol. i. (1900), p. 1073. Good abs. in *Brit. Jour. Derm.*, vol. xiii. (1901), p. 231.

coloured patches, imbedded in the corium, without imparting a notable change in texture to the touch, is very distinctive. Mili^{um}* may present a slight resemblance, but when large enough to simulate xanthoma, the little tumours are hard and tense, do not coalesce completely, are whitish in colour, often with a black centre like a comedo, and more superficial, being imbedded in the epidermis, from which they can easily be shelled out by an incision over them; moreover, if pricked, some of their contents can be squeezed out, and this will settle the matter. Solitary lesions in children are to be distinguished by their colour and softness from non-pigmented or white moles, and the latter are always congenital, which xanthoma very rarely is.

X. multiplex in the adult nearly always has jaundice to point to the right conclusion. The presence of the lesions in the corium must be borne in mind, as a case is published in the *British Medical Journal*, by a good observer as a rule, as one of X. multiplex, where yellow spots were in the epidermis only, and came off after soaking in olive oil.

In two instances† to my knowledge, cases of urticaria pigmentosa of infancy and childhood have been reported as X. multiplex. The early onset of the lesions without being congenital is very unlikely; then the lesions are firm in the urticaria and soft in xanthoma. Itching is nearly always a prominent symptom in urticaria pigmentosa, and close observation would detect the occasional presence of ordinary wheals, while factitious urticaria can generally be demonstrated. Pollitzer‡ records a case from Sangster's clinic in which *multiple dermoid cysts*, to the number of about one hundred and fifty, almost white or of a lemon-yellow colour, were indistinguishable from X. multiplex until microscopic examination was made, and refers to other cases of similar character and consequent error. Sangster's case was a woman, æt. twenty-four, in whom the disease began when sixteen years old. The tumours were situated symmetrically

* Author's Atlas, plate lxviii, fig. 2, shows grouped milium at inner canthi.

† Tchistiakoff's case, abs. in *Brit. Jour. Derm.*, vol. iii. (1891), p. 65, is evidently of this kind, and Dr. Barr's case in *Lancet*, May 12th, 1888. He was kind enough to show me the case at the Leeds meeting of the British Medical Association, and I recognised it as urticaria pigmentosa without doubt. Urticaria factitia also was present.

‡ *Brit. Jour. Derm.*, vol. iii. (1891), p. 398.

behind the ears, on the neck, and chest. Two of her brothers also had it. All the members of the Dermatological Society considered it a xanthoma.

Prognosis.—The involution of the lesions observed in the cases of Fagge, Frank Smith, Legge, Kaposi, and Pollitzer does not materially alter the prognosis, which is that, after progressing up to a variable extent, the lesions become stationary, and remain so for the rest of life. Pollitzer's more favourable prognosis is not supported by clinical facts, though doubtless the nodular is more likely to involute than the plane form.

Treatment.—Excision is the only means of cure, since the disease lies in the corium. Dissection through the whole thickness of the skin is required, but great care is necessary not to go too deep on the eyelids, or ectropion is produced. Especial care is required near the inner canthus of the lower lid, as very slight contraction will produce epiphora. The result is very satisfactory, as a linear cicatrix is nearly always possible, and this is imperceptible in the folds of the eyelid. Success has, however, been obtained by other means; thus, by rubbing in soft soap and making the patient wear indiarubber gloves, Kaposi removed from the hands some tubercles which he regarded as xanthomatous. Morrow applied salicylic plasters 25 per cent. to nodules on the soles and knees, and when the plaster was removed the epidermis and a number of xanthoma nodules came with it, while the others were so much softened that they could be curetted out. Fox of New York removed patches on the eyelids by electrolysis in five sittings of one minute each, and a current of one to three milliamperes; McGuire of Georgetown destroyed the disease in two cases by repeated applications of monochlor-acetic acid. Painting the palms with collodion containing five per cent. perchloride of mercury gave great relief in Darier's case, and Leslie Roberts used salicylic acid ℥j, chrysarobin ℥ss, ol. ricini ℥ss, collodion flexile ℥j with disappearance of palmar lesions, but without affecting those on the elbows and buttocks.

XANTHOMA DIABETICORUM.*

This is an extremely rare affection, but it is becoming generally recognised, and there were over thirty cases on record up to 1900.

* *Literature.*—Author's Atlas, plate lix. Dr. Hughes's case, p. 160, of Syd. Soc. ed. of Addison's works, model 2,738, Guy's Museum. *Path. Trans.*,

It differs in many respects from the usual type of xanthoma. The first cases were reported by Addison, Bristowe, and Malcolm Morris, to the last of whom belongs the credit of recognising it as a clinical entity.

Symptoms.—The eruption consists of dull red, discrete or confluent papules, quite firm to the touch, from a line to a quarter of an inch in diameter, well defined at the margin, and roundish or obtusely conical. On the top of many of them, but not of all, is a yellow or yellowish-white head, which looks like a pustule, but is really solid, and some of the papules are dotted or streaked with red from dilated vessels; a red areola is sometimes seen. Itching, pricking, or tenderness is generally felt in the lesions, and in one case, shooting pains preceded the eruption. The most common positions are the buttocks,* elbows, and knees, where they are generally confluent† and may form tumours, though the papular origin is generally still discernible. They have also been seen on the trunk, on the extensor surfaces generally, on the mucous membrane of the mouth, on the face, scalp, and bend of the ankles, but are rare on the other flexures, and on the eyelids in Besnier's case. In most cases, the lesions are not very numerous, but in some, such as Robinson's, Hutchinson's, and Morris's second case, the eruption is very extensive, the lesions being in such cases very distinctive, with the yellow apex on a red base of larger diameter. The eruption comes out rather suddenly at first, upon the extensor aspect of the limbs, especially the forearms, and then more gradually in other parts; after remaining stationary for some time—months, or even years

vol. xvii. (1886), p. 414, a case called by Bristowe "Keloid of a rare form." Malcolm Morris, *Path. Trans.*, vol. xxxiv. (1883), p. 278, with plate of histology, and at p. 284 is the report of the committee on the subject. A case in Hillairet's clinic, reported in Gendre's *Paris Thesis on Xanthelasma*. Chambard also has written a critique on the subject in *Ann. de Derm. et de Syph.*, vol. v. (1884), p. 348. Besnier, *Ann. de Derm. et de Syph.*, 1889, No. 5. *Brit. Jour. Derm.*, August 1892,—cases by Morris and myself, with histology. Török, *loc. cit.*, Part II., who gives references to fifteen cases up to 1892. There are coloured illustrations to Jamieson's case in *Brit. Jour. Derm.*, vol. vi. (1894), p. 289. Norman Walker's case, *loc. cit.*, vol. ix. (1897), p. 461, with a table of thirty cases.

* In Jamieson's case the buttocks and lower limbs were free.

† In Pollitzer's case there were large masses on the elbows. Although there was abundant glycosuria in a boy of seventeen, it is probable from the description that it was an ordinary X. multiplex.

—the papules begin to disappear, rather quickly when they once begin to go, leaving no trace behind them, or, while some disappear, others come out; or again, they may disappear entirely for a time, and then break out once more.

In a case of Sequeira's, the lesions were in chains tending to form circles, "like a string of yellow coral beads."

Etiology.—Only about one in ten are females. The ages have been from twenty-one (Norman Walker*) to fifty-seven (Johnstone);† there has been diabetes mellitus in most of the cases, in Bristowe's probably after the eruption, in Hallopeau's and Cavafy's before it—at least the patient had been told he had it and Bright's disease, but there was no sugar or albumen when he came under observation. Hutchinson's case, however, a stout man, never had diabetes or jaundice; his disease came on after "a bilious attack," to which he was subject; it was, however, of the same type as the other cases, and got quite well. Besnier also mentioned a case where there was no diabetes, but the patient was obese and his father was diabetic. Vidal's, Payne's, and Sequeira's cases also had no sugar, so it is not an essential feature. Colombini's case had no sugar, but had pentose and albumen; several of the other cases have had albumen with sugar.

It is noteworthy that, while a few have had typical diabetes, most cases have been stout and well-conditioned, and their aspect by no means suggested diabetes, so that the eruption becomes of some diagnostic value. In my own case, it was quite unsuspected until the eruption put me on the track. On the other hand, a woman, æt. thirty-two, a patient of Abraham's, presented typical X. diabetorum, and had the classic symptoms of diabetes.

In Darier's case, in the *St. Louis Atlas*, there was hypertrophic cirrhosis, obesity, and glycosuria, and the whole style of the case was that of ordinary X. multiplex.

Pathology.—The diseased process appears to be anatomically of the same nature as ordinary nodular xanthoma, but with more inflammatory phenomena and less connective tissue growth. Since Bristowe and Morris first made anatomical investigations, the histology has been more thoroughly gone into by Robinson,‡

* Norman Walker's and two of Hillairet's. One of these, by Gendre, Török regards as an ordinary X. multiplex.

† Pollitzer's doubtful case was seventeen years old.

‡ *Brit. Jour. Derm.*, vol. iii. (1891), p. 106; and *Internat. Atlas*, plate xiii.

Clarke* on Morris's second case, myself, Norman Walker, and Unna. The last two are quite in agreement and, as before stated, while Unna regards ordinary *X. tuberosum* and *X. diabeticorum* as variations in the same process, he considers them both as essentially different from *X. planum*. Krzyształowicz† has also examined a case. In *X. diabeticorum* the whole of the process is in the corium, either superficial or in the centre. Large cells‡ with several nuclei are found in this as in the other form, and they seem to be in abundance in proportion to the size of the lesions. There are, however, few in a very early papule, and they are much less developed than ordinary xanthoma cells. In this form also, there is no actual connective tissue growth, but Robinson found proliferation of connective cells in large papules. Round-



Fig. 39.—A general view of a small nodule of xanthoma diabeticorum, showing that the diseased area extends from the rete Malpighii through the whole depth of the corium, and that it consists of a round-cell infiltration with small groups of epithelioid cells scattered throughout it. Compare with fig. 38.
 × 1-in. Ross, 2-in. oc.

cell infiltration and dilated vessels are here much more marked than in ordinary xanthoma. There is also a greater tendency of the lesion to be situated at the hair follicles. As might be anticipated from the clinical features, the predominance of active inflammatory changes is the most important and striking difference between the two forms.

With regard to its pathogeny, in diabetes, as in jaundice

* *Path Trans.*, vol. for 1892, plate xliii.

† In Unna's laboratory, *Monatsh. f. Derm.*, vol. xxix. (1899), p. 201, illustrated, and numerous references.

‡ Norman Walker, *Brit. Jour. Derm.*, vol. ix. (1897), p. 461. Unna found no multi-nuclear cells. *Histopathology*, p. 951.

disorder of the hepatic functions exists, but the clinical facts show that derangement short of that necessary to produce either diabetes or jaundice may yet produce xanthoma.

Diagnosis.—The disease differs from ordinary xanthoma in the following particulars:—The sudden evolution and involution of the eruption, the latter always occurring sooner or later, while in xanthoma, involution is very exceptional and gradual. The lesions are firm and solid in *X. diabetorum*, but in xanthoma all except the largest tumours are soft at the commencement; in *X. diabetorum* they are inflammatory, and, as Addison described them, of “a lichenous character”; the yellow top is not present at first, nor in all papules. In xanthoma, visible signs of inflam-



Fig. 40.—A small portion of fig. 39 more highly magnified to show the epithelioid cells, some of them multi-nucleated. $\times \frac{1}{4}$ -in. Ross, 2-in. oc.

mation are quite absent, and the yellow tint is always present. There are never any patches or striæ, but always nodules or infiltrations; this is exceptional in *X. multiplex*. In the latter, also, it is very rare in the adult not to find jaundice, and for the lesions to be absent from the eyelids; moreover, the ordinary form has never been observed with diabetes mellitus except in the cases of Besnier's, Darier's, and perhaps of Pollitzer's, though it has with insipidus. Subjective symptoms are the rule in *X. diabetorum*, the exception in *X. multiplex*. Finally, the lesions, in many instances, are in the neighbourhood of the hair follicles, which is not the case in the ordinary form, and the microscopic appearances are also different. Probably the comparative acuteness of the process accounts for all these dissimilarities.

Prognosis.—All the cases get well, the majority in a few months; one lasted over five years.

Treatment.—The measures requisite for diabetes exercise a favourable influence on the eruption. Several have appeared to benefit by the administration of arsenic, but the special diet, etc., for the diabetes may have been the real cause of the improvement; it is, however, a good tonic, so may be tried. If any local treatment is required to allay the irritation, liq. carbonis detergens ℞ to ʒj of calamine lotion would probably fulfil all indications; or olive oil might be rubbed in, with or without a few drops of oil of cade.

COLLOID DEGENERATION OF THE SKIN.*

This very rare affection was first described by Wagner as colloid-milium. Cases have since been reported by Besnier Liveing, Feulard, and others.

Symptoms.—It occurs chiefly upon the upper two-thirds of the face, especially upon the cheeks and orbits, the bridge of the nose and forehead, but in a case of Liveing's the neck and upper arms were also involved. The lesions form slowly in groups, but are not confluent, and consist of pin's-head to millet-seed or split-pea-sized, glistening, translucent, lemon-yellow, flattish elevations imbedded in the skin, looking as if they contained fluid, but when pricked a small jelly-like mass and a drop of blood are all that can be squeezed out. Some have dilated vessels round them, and soon become depressed in the centre till the whole is gone, leaving a depression; or they may inflame and scab over and dry up, leaving a mark, but not a defined scar (Liveing). The disease affects both men and women from the age of sixteen and upwards, without any departure from health to account for it. Wagner thought that the change began in the sebaceous glands, but Balzer, who examined both Besnier's and Feulard's cases, con-

* *Literature.*—Wagner, "Das Colloid-Milium der Haut," *Archiv der Heilk.*, bd. vii. (1866), p. 463. Besnier, *Ann. de Derm. et de Syph.*, vol. x., Nos. 5 and 6 (1879); *ibid.*, vol. vi. (1885), p. 342, with histology by Balzer. Models 614 and 1019 in St. Louis Museum. Liveing, three cases in *Brit. Med. Jour.*, March 27th, 1886. These were not examined microscopically. Unna's *Histopathology*, p. 988, and on "Special Staining," p. 982. "Colloid Pseudo-Milium," C. Pellizzari, *Giorn. Ital. d. Mal. Ven. e. d. Pelle*, vol. vi. (1898), p. 692. Abs. *Brit. Jour. Derm.*, vol. xi. (1899), p. 371. Petrini de Galatz reported a case under Colloid at the Congress of Dermatologists at Graz, *Archiv f. Derm.*, vol. xxxiv. (1896), but it was an epithelial disease of a different character.

siders that the degeneration commences as an infiltration in and round the fibres and cells of the upper part of the corium, especially in the neighbourhood of the sebaceous glands and their sacs. All epithelial structures escape, except the endothelium of the vessels, which may be attacked with the rest of the walls. There were no cysts or cavities lined with epithelium and filled with colloid substance, and no epithelial bands. Whether the affection is due to vascular alterations in the first place he could not determine, but thought it probable. The absence of cavities, etc., is emphasised, as L. Philippson* has endeavoured to establish the identity of colloid of the skin with the hydradenoma of Darier and Jacquet, founding his view on his microscopical observations on two cases from Unna's clinic. Besnier, however, who is familiar with both affections, disputes their clinical identity, pointing out that in colloid the lesions have uniform characters, are limited to the face (this was not so in a case of Liveing's), are not congenital, but of comparatively recent development, and are not associated with other lesions. Balzer, who also examined the Darier-Jacquet case before they did, disputes the histological identity of colloid with hydradenoma. At the International Congress of Dermatologists of 1892, Perrin of Marseilles reported another case with histological examination. The patient, a woman of fifty-four, in bad circumstances, and much exposed to the weather, had an eruption like the cases of Besnier and Feulard on the upper part of the face and the ocular conjunctivæ, and, in addition, had similar lesions on the backs of the hands. The histological examination by Reboul showed the colloid change in the walls of the vessels and in the connective tissue, which was much increased, thus confirming the observations of Besnier and Balzer, and disproving that of Philippson. For the further discussion of the subject, the reader is referred to Lymphangioma Tuberosum Multiplex.

A case reported by G. H. Fox as probably colloid was pronounced by Elliot after microscopical examination to be of decided tubercular character. The clinical features also differed from other cases of colloid. Pellizzari's case was a man, æt. forty-five, much exposed to the weather, and also, like Perrin's case, the

* *Brit. Jour. Derm.*, vol. iii. (1891), p. 35. He critically reviews all previous cases of colloid, with their references. Besnier's answer to this paper is a long and important note in Kaposi-Besnier, vol. ii., p. 370.

lesions were on the back of the hands, the cheeks, and nose. They were yellowish papules from a large pin's-head to a pea in size, slightly transparent, but on section no fluid exuded, but a small round body of gelatinous appearance escaped. There was no sign of inflammation. Histologically, there were cavities in the derma containing hyaline masses, the elastic fibres had gone, and the external and middle coats of the vessels showed hyaline change. The epidermis was normal. La Meusa's* case was also a man exposed to the weather, and the histology showed that the process was due to a degenerative change in the elastic fibres.

Charles J. White† has recorded a seventh case, an Irishman, æt. fifty-two, also exposed to the weather. The lesions began on the back of the hands, and when seen were also on the face, radiating from the outer canthus, and on the cheeks and ears, where they were very abundant. Each lesion was a smooth flat papule one-eighth to one-quarter of an inch in size, projecting one-eighth of an inch, of irregular outline, very translucent, yellowish-brown in colour, and soft, elastic, and almost gelatinous to the touch. On section the papillæ were quite gone, nearly the whole of the corium having been replaced by the colloid material, leaving only a narrow zone of elacin and a few connective tissue fibres. The true colloid‡ was composed of a groundwork of fine or coarse granules, staining uniformly with picric acid and other stains; perfect connective tissue nuclei were scattered through the homogeneous mass, and there were many leucocytes near the capillary boundaries.

Diagnosis.—The disease may be distinguished from xanthoma, which it most resembles, by the glistening and translucent appearance of the granules, and while on the one hand it is limited to the face, ears, and hands, on the other it is not limited to the eyelids. To distinguish colloid from such cases as Philipppson's, microscopic examination would be required. The patient having been much exposed to the weather would be suggestive.

* Abs. *Brit. Jour. Derm.*, vol. xiii. (1901), p. 316.

† *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. xx. (1902), p. 49. He has missed Pellizzari's and La Meusa's cases and calls his the fifth.

‡ According to Unna, collagen (normal connective tissue) breaks up and combines with elastin (normal elastic tissue) to form collastin. A later step is the combination of collagen with elacin, and produces collacin, and this degenerates into colloid. The elacin does not undergo further change.

Treatment.—No internal or external application has any effect. One of Liveing's cases got well spontaneously, but very slowly. Feulard treated his case with good result by erosion of the masses with a sharp spoon. I should try electrolysis.

Pseudo-Colloid of Lips.—Fordyce* has called attention to this curious condition of the lips, which in slight degrees is not very rare. It consists of yellowish, semi-translucent miliary masses the size of an average pin's head, level with or slightly raised above the surface, closely aggregated into a broad or narrow line on the red of the lips, while farther in the oral cavity they may be in small groups or even single. They are not perceptible to the touch, give rise to no inconvenience, are generally discovered by accident, and require no treatment. In one of Fordyce's cases an epithelioma of the lower lip was also present, but no relationship between the two conditions was established.

Microscopically.—Fordyce found the entire epithelial layer considerably thickened, and all the cells except those of the lowest layer had undergone a degenerative change of the protoplasm, leaving the nucleus unaffected. The protoplasm was broken up into irregular glistening granules, which he did not succeed in staining, and the change was not determined, and it is only from the clinical aspect that I provisionally suggest this name.

TUBERCULOSIS OF THE SKIN.†

A great variety of skin lesions appear to be due either directly or indirectly to tubercle.

* "A Peculiar Affection of the Mucous Membrane of the Lips and Oral Cavity," *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. xiv. (1896), p. 413. (Coloured and microscopic plates.)

† *Literature.*—Discussion Third. Internat. Cong. Derm., 1896, p. 385, by Nevins Hyde, Hallopeau. etc, "Die Exantheme der Tuberculose," von C. Boeck, *Archiv f. Derm. u. Syph.*, vol. xlii. (1898), pp. 71, 175, 363. "Die Tuberkulösen Erkrankungen der Haut," von Jadassohn in *Ergebnisse der Allgem. Path. und Pathologischen Anat. des Menschen u. der Thiere* von Lubarsch Ostertag. "The Cutaneous Paratuberculoses," by J. C. Johnston, *Philadel. Monthly Med. Jour.*, February, 1899; good abs. in *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. xvii. (1899), p. 317. Tommasoli, *Monatsh. f. p. Derm.*, vol. xxi. (1895), p. 309, sees tubercular intoxication in a large number of heterogeneous diseases, but this only shows how common tubercle is in Italy, as his observations are not borne out by the experience of others. "Les Tuberculides," Discussion at the Internat. Congress at Paris in 1900, p. 95, by Boeck, C. Fox, Darier, etc.; and C. Fox's report and table of cases and comments in *Brit. Jour. Derm.*, vol. xiii. (1900), p. 383.

In only a few has the presence of tubercle bacilli been proved in the lesion itself, viz., in lupus vulgaris, lupus verrucosus, scrofuloderma, and miliary tuberculosis, and even with regard to scrofuloderma there is some evidence that throws doubt upon its being due solely to tubercle. This is important, as there is a tendency to drop the term scrofula as being only tuberculosis under another name; it is, however, convenient to preserve the old nomenclature, as tuberculosis of the skin has too wide a meaning to indicate by itself the character of the lesion in question.

Broadly speaking, the lesions produced by the direct presence of tubercle bacilli, with which alone this section treats in detail, are characterised by a granulomatous structure with giant cells and tubercle bacilli, which are generally in small numbers, as the bacilli multiply with difficulty in the skin.

Clinically, except the miliary form, they are of slow development, are single or in moderate numbers, and symmetrical in distribution, and ulcerate either spontaneously or with slight provocation, and are then very difficult to heal. When bacilli cannot be found directly, their presence may be inferred when inoculation of the suspected tissue into guinea-pigs and rabbits produces general tuberculosis.

Miliary tuberculosis of the skin appears to be the direct outcome of visceral tuberculosis, and visceral tuberculosis appears to have resulted from some cases of lupus verrucosus and scrofuloderma; but although the two are occasionally associated, it is very doubtful if phthisis has ever arisen from a nodular lupus vulgaris. It is said that visceral tuberculosis secondary to skin lesions run a slower and more benign course than those which are primary.

Other lesions of the skin indirectly connected with tubercle may be grouped under the French term *tuberculides*. In some, such as lichen scrofulosorum and acne scrofulosorum, the evidence of this connection is very strong, and they are probably due to the tuberculin toxin; indeed, lichen scrofulosorum has actually been produced by injection of Koch's tuberculin (Schweninger and Buzzi). In others, the connection is less demonstrable, as in erythema induratum of Bazin, eczema scrofulosorum, folliclis of Barthélemy, the pityriasis rubra of Hebra, a dyschromia resembling the pigmentary syphilide, lupus erythematosus, and sundry anomalous cases which are from time to time reported as the result of tubercle. Two or three of the above affections may

be associated in the same individual, and Hallopeau has seen together cutaneous and subcutaneous gummata, lupus vulgaris, lupus verrucosus, lichen scrofulosorum, and folliculitis.

The tuberculides are inflammatory in character, and not granular in structure, do not contain tubercle bacilli, and the lesions are often very numerous, bilateral and even symmetrical in their distribution in many cases, and although the disease may as a whole be obstinate, the individual lesions can be easily got rid of. In all except lichen scrofulosorum and acne scrofulosorum, the tubercle toxin theory invoked to explain them seems to me highly improbable, since experiments on a large scale were carried out when Koch's tuberculin was in vogue for the treatment of phthisis, and while many thousands of injections were given, only lichen scrofulosorum and a few papulo-pustules were produced in a few cases; and it must be remembered that nearly all the injections were made in tubercular subjects. It may well be, however, that the soil which we call the tubercular constitution may be favourable for the development of other organisms and toxins than those of tubercle, and the fact remains that in the victims of these eruptions a very high proportion of them have evidence of tubercle in their near relatives, and sometimes in themselves also. The evidence is not equally strong for all these diseases, and for some of them, especially lupus erythematosus, its connection with tuberculosis is regarded by most dermatologists as a very slender one, or is denied altogether, and in this work it is not treated as a tuberculosis.

The following table may be useful, although it is only tentative, and for any one disease must be read in conjunction with its pathology as set forth in its own section.

DISEASES DIRECTLY DUE TO THE PRESENCE OF TUBERCLE BACILLI IN THE TISSUES.

LUPUS VULGARIS Bacilli sparse

LUPUS VERRUCOSUS

Including Tuberculosis verrucosa cutis and Verruca necrogenica.	}	Bacilli sparse, but less so than in L. Vulgaris
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SCROFULODERMIA

Including chronic ulceration with or without Lupus Papillomatosus and Tuber- cular Lymphangitis, either nodular or recurrent (Erysipelas perstans of Kaposi).	}	Bacilli not always to be found; when present fairly abundant
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MILIARY TUBERCULOSIS CUTIS.

Acute or chronic, including ulceration.

Bacilli usually but not always
sparse in each small nodule
but abundant in aggregated
nodules and resulting ulcers.

ERYTHEMA INDURATUM.

Guinea-pig inoculations successful, but
bacilli not found in the tissues.

Some nodular, patchy, ulcerative, suppurative, and otherwise anomalous cases, from time to time reported, which do not accord with the foregoing forms, in which bacilli or a very distinct tubercular structure have been found.

TUBERCULIDES (DARIER); PARA-TUBERCULOSES (JOHNSTON).

(Diseases indirectly due to Tubercle Bacilli)

A.—Probably resulting from their toxin.

LICHEN SCROFULOSORUM

And the suppurative folliculitis of the
mons veneris, described by Kaposi in
connection with some cases of it. Iso-
lated pustules on the trunk are also often
present.

Some observers claim to have
found Bacilli in the lesions; it
has been produced by Tubercle
toxin.

ACNE SCROFULOSORUM

And other forms of Folliculitis, isolated or in patches, such as are
described by Hallopeau, etc. (*vide* end of article on Acne Scrofulosorum).

ACNE AGMINATA, OR ACNITIS AND FOLLICLIS.

MORBILIFORM AND SCARLATINIFORM ERYTHEMA occur occasionally in the
course of acute tuberculosis and after tuberculin injections, but resemble
those liable to occur from any toxin.

B.—Probably not due to Tubercle Toxin, but predisposed to by the constitu-
tion which is favourable to Tuberculosis.

ECZEMA SCROFULOSORUM.

PITYRIASIS OF HEBRA (not the ordinary form).

DYSCHROMIA, like the pigmentary syphilide?

LUPUS ERYTHEMATOSUS. But Tuberculosis is probably only one of several
factors, and is probably not constant.

LUPUS VULGARIS. *

Deriv.—*Lupus*, a wolf.

Synonyms.—*Lupus exedens*; *Fr.*, *Lupus vulgaire*; *Scrofulide tuberculeuse*; *Herpes esthiomène*; *Dartre rongearte*; *Esthiomène*; *Ger.*, *Fressende Flechte*; *Lupus*.

Definition.—A neoplastic cellular infiltration caused by the

* *Literature.*—Author's Atlas, plates lx. and lxi., show nodular form, and

Tubercle bacillus producing papules, nodules, and patches, which either ulcerate or atrophy, leaving scars.

It is a common disease in this country, forming about 2 per cent. of all cases ; as, however, it is an obstinate and very chronic affection, dermatological statistics doubtless exaggerate its frequency, as patients come back year after year.

There are no true varieties of this form of lupus, the numerous qualifying terms which will presently be explained depending upon minor differences, but clinically we see it in a nodular, infiltrating, and ulcerative form.

Symptoms.—A typical case of nodular lupus begins on the face, especially the cheek and nose, and nearly always in a child. In a cheek case, there appear at the commencement one, or, if several, then grouped pin's-point to pin's-head-sized spots, of a dull red colour, which, according to the depth of the little mass in the cutis, are depressed below, level with, or slightly raised above the normal skin, and pale, but do not disappear on pressure. These spots gradually develop to small nodules, which have a semi-translucent aspect under the stretched epidermis, and a brownish hue, so that the appearance of the nodule has been aptly compared by Hutchinson* to "apple jelly." After a variable time, more often years than months, the groups of nodules coalesce by individual extension into a dull red patch or patches, distinctly raised above the surface, soft and elastic to the touch in the centre, but firmer at the edge, which is more raised and more or less nodular and still translucent. By this time, there is generally more or less scaliness present, but not enough to obscure the ground colour of the infiltration, which goes on slowly extending at the edge, or more commonly by the formation of fresh nodules, which, as they enlarge, merge into the major patch.

There is usually only one focus of disease, but when there are several patches, on one or both sides of the face, the disease is

some of figures of plates lxii. and lxiii. show ulcerative varieties. St. Louis Atlas, plate i., and Syd. Soc., plates iii., vi., and vii., ulcerating lupus copied from Hebra's Atlas. Leloir, "La Scrofulo-Tuberculose," 1892. A valuable monograph, with numerous illustrations of interesting cases.

* Hutchinson used the term "Lupus" in a very wide sense. His special views are set forth in the Harveian Lectures for 1887, published in *Brit. Med. Jour.*, vol. i., 1888 ; also Post-Graduate Lectures, *ibid.*, vol. i., 1891.

seldom symmetrical,* except when it begins on the nose, and spreads equally on both sides, and then it may assume the same shape as *L. erythematosus*. When the skin of the nose is affected, the whole thickness of the soft tissues may be involved as well; and then, as in all cases when it attacks the mucous orifices, ulceration occurs, but, owing to the fungating granulations covered with brownish crusts, although swollen, the general outline of the nose is long preserved, and it is not until these granulations are removed that the amount of destruction can be fully realised. The disease may ultimately destroy all the anterior soft parts, the cartilages and even the bones dropping out, but the bones are never directly affected; or the infiltrated parts may undergo fatty degeneration and atrophy, leaving a thin eroded edge to the widely opened nostrils; but there may be thickened cicatricial contraction when the disease is removed by surgical measures. The disease does not advance continuously, even in childhood, but has variable periods of improvement, quiescence, or activity, in the last spreading, or ulcerating, or forming new nodules in old scar tissue or at the borders of the infiltration.

In the adult, the quiescent period may last for years, but it may break out anew whenever it is subjected to external irritating, or internal depressing influences. During the improvement stage, more or less of the central part of the infiltration undergoes disintegration and absorption, and atrophic scarring results, without any external wound at any time. The disease as a whole, however, very seldom gets well spontaneously, the edge nearly always retaining its vitality even when the interior is entirely cicatricial.

The disease is by no means limited to the face. The next most common positions are the limbs, especially below the elbows and knees, the buttocks, the trunk, the mucous membrane of the nose, eye, mouth, larynx, pharynx, vagina, and uterus; but it is nearly

His smaller Atlas contains many interesting plates of lupus, as he regards the diseases he includes under that term, viz., anything which scars and spreads especially by what he calls fresh satellites, *i.e.*, foci of the disease just beyond the main patch, thus including many non-tubercular diseases.

* In one of my cases, the disease was symmetrical on the inner surface of both knees, but contact inoculation was the probable explanation; he had an asymmetrical patch on one thigh. Morris had a case with lupus of the lobes of both ears, probably from inoculation when the ears were pierced.

always associated with lupus elsewhere, especially on the face. While, however, no part is exempt, many positions, such as the hairy scalp,* the upper eyelids and middle of the forehead, the neck, genitals, palms, and soles are scarcely ever attacked, except by extension from the neighbouring regions, but I have once seen the scrotum primarily and exclusively attacked with lupus nodules in a boy of six, and Matthews Duncan described what he called "lupus of the vulva," but the general opinion is, that his cases were examples of syphilitic ulceration. It is extremely rare on the scalp,† but in a lady under my care, lupus began at the climacteric and extended rapidly over the whole face and scalp.

Great variety of aspect is produced by enlargement of old patches and formation of new ones in their neighbourhood, and the presentation of the various stages simultaneously in different parts of the main area of disease. Thus, in one part, is the thin white parchment-like atrophic cicatrisation; in another, the destruction is deeper, and a seamed scar is the result; here, one part may be still ulcerating and covered with a dirty greenish crust, there, the infiltration is quiescent and covered with scales; here, new nodules are forming at the periphery, there, they are just appearing as small brown specks in the scar tissue, where at any rate the process seemed to have finished.

After absorption of a mass of lupus, the epidermis over the affected area becomes less dense, wrinkled, and more scaly, or even slightly crusted from exudation through a fissure; the exfoliated epidermis is constantly renewed, and ultimately the centre, rarely the whole, sinks down below the border, and when the last scales are thrown off, the skin is left thin and cicatricial, and ultimately white. When lupus ulcerates, the infiltration gradually softens, and breaks down into a pultaceous pus, which dries up into a greenish dirty-looking crust. This, when removed,

* A curious case of direct inoculation of tubercle bacilli on the scalp and the production of lupus is recorded by Wolters. A medical student working with phthisical sputum, scratched frequently a wound on his head, from a duel, and typical *L. vulgaris* developed there. *Deutsch. Wochensch.*, September 8th, 1892.

Neisser had a case of a man of forty in whom a patch appeared on the scalp, probably inoculated by scratching from an old lupus of the arm, *Berlin Med. Wochensch.*, 1895, p. 53.

For N. Walker's views on the so-called ulceration of lupus see *Anatomy*.

† *Ulcerating Lupus (L. Exedens)*.

exposes a freely suppurating ulcer, which subsequently granulates freely and exuberantly.

Great stress used to be laid on the difference of suppurating and non-suppurating lupus—*L. exedens* or *L. non-exedens*, as it was called. In lupus of the scrofulous more or less suppuration is the rule, the ulcerative process being the predominant feature, and the brownish-red infiltration inconspicuous; but even the more quiescent nodular lupus will ulcerate if irritated, or if at the border of a mucous orifice, such as the mouth or nose.

Variations.—These depend chiefly upon the extent and position of the lesions, the constitution of the patient attacked, the amount of infiltration, its rate and mode of progress, its greater or less tendency to ulcerate or atrophy, and the complications which may arise. The number of foci may be very great; thus, in one of my cases, a boy of ten, there were forty-seven patches from a millet seed to a shilling, scattered over the whole body, viz., twelve on the face, one on the neck, seven on the trunk, and twenty-seven on the limbs. They were nearly symmetrical on the face, and showed very little tendency to spread in nearly three years. As usual, they came out all together after measles; but in another case, which did not begin until he was twenty-nine,* patches on the face and limbs came out at intervals spread over eight years. When along with multiplicity there is a decided tendency to spread, and the disease has lasted many years, a very large part, † or nearly the whole body surface, may be involved, but such cases are very rare. On the other hand, in a few instances, it may be scattered irregularly in small patches over one region; thus, in a boy, it followed on herpes of the ophthalmic division of the fifth, being limited to the site of the vesicles. Kaposi has met with a similar case in a man. Such cases, which are most frequent on the face, are well entitled to the term **L. disseminatus**, which is used for any cases with multiple patches, while **L. serpiginosus** is applied to cases where two or more circular patches have coalesced into a gyrate form, and enlarge at the margin as new nodules develop near it, and coalesce with each other and the parent patch. This occurs chiefly on the neck and extremities, and is sometimes a severe form from its rapid

* Author's Atlas, plate lxi., fig. 1.

† See plates lxvii., lxviii., lxxvi., and lxvii., Hutchinson's smaller Atlas.

spreading. Such cases may be considered as examples of **acute lupus**. The process is attended with great hyperæmia and heat of the skin, and such cases, if they do not break down spontaneously, do so on very small provocation, especially if the treatment is of at all an irritating character, and they recur very rapidly after scraping.

L. hypertrophicus is applied to cases where solid lymphatic œdema is associated with the visible lupus infiltration, such as may be often seen in the upper lip, or where there is exuberant infiltration, much raised at the margin above the normal skin, but generally depressed in the centre, as is often seen on the buttock, but it may occur elsewhere. Thus Angier records an enormous growth of the lobe and lower half of the ear of a woman. To conceal the deformity she bound it to her head, and nodules developed at the points of contact on the scalp.

The result of central involution with the retention of activity at the border is the formation of rings (**Lupus annularis**),* which may enlarge in area while the outer ring may not alter in thickness. In strumous subjects, the border may ulcerate and crust, and this is the most common circinate form, but occasionally the same process may be seen in nodular lupus, and when there are several rings difficulties in diagnosis may arise.

L. vulgaris fibromatosus. Fibroid lupus is the name applied by Unna and his followers to cases in which a good deal of the inflammatory process at the base, and round the lupus patch, becomes organised into fibrous tissue. Such cases are very dense and hard to the touch; they may appear like ordinary nodular lupus, but resist both the curette and tuberculin, which make but little impression on them. It may also be met with as part of the so-called hypertrophic lupus. It is most common on the buttocks; much less so on the face. In a girl of twenty-two, the disease began when she was seventeen, on the back of the neck, and subsequently the nose, cheeks, forehead and orbit, the right ear, hand, and arm, occiput and palate. On the face they were brownish-red, semi-translucent nodules which had coalesced into patches. Most of the lesions came out simultaneously. There was slight ulceration about some of them. The new tuberculin was thoroughly tried

* Author's Atlas, plate lxii., fig. 1; G. S. Elliott's case also, *Amer. Jour. Cut. Dis.*, vol. xiv. (1896), p. 476, presenting unusual features.

on her, but the effect was trifling. She was then scraped, but the base of the patches was very resistant to the curette, and could not be entirely removed, so it was scarified, and pure carbolic acid applied, and great improvement resulted a month. Subsequently the Finsen light treatment was thoroughly tried without any improvement.

In adults, very rarely in children, the infiltration is very slightly or not at all nodular, but in plaques slightly raised above the surface, and more so at the border than the centre. The colour is red, with slightly brownish tint, but is not translucent, like ordinary lupus nodules. There may be only one patch or more, and in some cases, especially if the disease is bilateral, it is a little difficult to say whether it is a *L. vulgaris* or a *L. erythematosus*. Leloir* described a *L. vulgaris erythematodes*, which closely resembles *L. erythematosus*; inoculation of guinea-pigs with some of the tissue produced tuberculosis, and tubercle bacilli were found in the tissue. In some parts, the lesions histologically resembled *L. vulgaris*, while in others they were clinically like *L. erythematosus*. Leloir says that it may take the butterfly shape on the nose and cheeks or be unilateral, is often covered with telangiectic vessels, and may be slightly scaly. By stretching the skin nodules can sometimes be seen imbedded; it may invade both the scalp by the nucha and the mucous membrane of the mouth.

Complications.—On the limbs, secondary inflammatory accidents are more liable to occur, but not till after some years' duration of the disease. Among these may be mentioned subcutaneous nodes, which after a time are adherent to the skin on the one hand and the periosteum on the other; abscesses, periostitis, osteitis, caries, and necrosis occasionally occur, and the bones of the forearm and leg, and also those of the hands and toes, may become indurated and thickened, while more or less crippling of the joints may supervene from cicatricial atrophy of the skin and adhesion of tendons; such conditions would rarely occur except in those who were markedly strumous, and are not the direct effects of lupus. Erysipelas and lymphangitis are liable to occur at any time, and

* *Jour. des Mal. Cutanées*, May number, vol. iii., 1891. Hardaway has published an interesting case which resembled the two diseases very closely, *Trans. of Seventeenth Annual Meeting of Amer. Derm. Assoc.*, September, 1893.

all these inflammatory complications may eventually, by the consequent obstruction to the lymphatic and blood flow, lead to elephantiasis of the legs, but very rarely of the arms. In Fischer's case, dermatolytic tumours formed on the thighs from similar causes. When erysipelas occurs on the face, chiefly as a sequel to the use of caustics, great improvement to the lupus often results, as I have several times witnessed. On the other hand, some of the cases of acute lupus before mentioned get attacks of recurrent lymphangitis, which, if not actually erysipelas, are indistinguishable from it, except that they seem to lead to extension of the disease instead of its involution. Kaposi has called it *erysipelas perstans*, but it is now regarded as a tuberculous lymphangitis, and may be the sole manifestation of tuberculous infection.

Besides the complications described in lupus of the limbs in strumous subjects, enlargement, caseation, and suppuration of the glands in the neighbourhood of the face may occur, and even chronic enlargement of the parotid. Leloir has shown that this lymphatic enlargement is often a real infection with tubercle bacilli, and not merely swelling, the result of irritation. The red lines often seen leading from the lupus patch after tuberculin injections are also to be regarded as evidence of lymphatic infection.

Lupus papillomatosus * is not a true variety of lupus. Papillomatous outgrowths occur as a complication of any chronic ulceration, but when not associated with tuberculosis is not called lupus. It is probably a product of pus cocci rather than of tubercle bacilli. In this condition, papillary growths of granulation tissue, not true papillomata, are produced, and are usually covered with thick yellowish or greenish crusts. When these are removed the papillary easily bleeding growths are exposed. The extremities, especially the backs of the hands and feet, and buttocks are favourite positions for it, but an extreme development on the face is recorded by Morrow.† Possibly it was really *Plastomycosis*.

Elephantiasis may complicate lupus when the infiltration blocks

* Author's Atlas, plates lxii., fig. 2, and lxiii., fig. 3, and Hutchinson's smaller Atlas, plate lxxix.

† *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. vi. (1888), pp. 361 and 401. "Tuberculosis Papillomatosa Cutis, and the Relation of Papilloma to Syphilis, Lupus, etc.," with coloured plate; and in Morrow's Atlas, plate lxvii.

the lymphatic circulation. It is, in fact, a further development of *L. hypertrophicus*.

Epithelioma is another more serious complication in lupus of long standing, which occurs in two per cent. of the cases (Leloir). It may develop in the lupus scar tissue, but it rarely, if ever, attacks the lupus tissue in my opinion. If on the face, it may penetrate into the mouth, but in whatever position the life of the patient can only be saved by early and wide removal. It may be either fungating or ulcerating, and is said to occur chiefly in women. In a man, æt. twenty-nine, the lupus had existed for twenty years, extending over a large part of the face, and over the right lower jaw an epitheliomatous growth the size of half a plum had developed three months before I saw him. The growth was freely removed by my colleague, Mr. Pollard, and six years afterwards another smaller growth formed lower down. This was also removed in 1896, I believe without recurrence. I have had another equally successful male case with no recurrence since June, 1894. The early development is not unusual. Bayha* noted four cases out of the forty-two he collected, and only one out of ten appeared to be cured after excision, the others recurring with fearful malignity, for lupus tissue seems to favour the rapid spread of the disease. Probably these cases either did not come under observation sufficiently early, or the removal was not wide enough. In a case of Audry's it supervened on a lupus of the bucco-pharyngeal mucous membrane, and of course nothing could be done.

Among general complications may be mentioned, in addition to scrofula, chlorosis, emaciation, and phthisis, the last chiefly where the skin lesion is very extensive. Lespinnes, † from observation of four cases in Leloir's clinic, describes a complication which occurs sometimes in ulcerating lupus just before it breaks down. There is a sudden rise of temperature, immediately followed by prostration of a typhoid character. There are gastro-intestinal

* Much of Bayha's monograph is reproduced, with additional cases, illustrations, and remarks, in Hutchinson's *Archives of Surgery*, vol. ii., p. 138. See also Bidault's *Thèse de Lille*, 1886, and Karpinski's of Greifswald, 1891. My case was published in my *Atlas*, plate lx. In *Archiv f. Derm. u. Syph.*, vol. lvii. (1901), p. 193, Ashihara gives a very complete survey and bibliography. Naegeli, in Virchow's *Archiv*, bd. cxlviii., gives forty-nine references.

† *Jour. des Mal. Cutanées*, vol. iii. (1891), p. 531.

and bronchial catarrh, and even endocarditis or other serous inflammation. All these symptoms come on simultaneously, and resemble those produced by tuberculin injections. Leloir therefore inclines to the belief that the symptoms are due to the absorption of similar products of bacillary action, and antiseptic local applications have been followed by rapid subsidence of the symptoms in most cases, but general tuberculosis has resulted or permanent organic disease of the heart been left. Fortunately this complication is very rare.

Lupus and other forms of tuberculosis of the skin may be complicated by syphilis. No law can be laid down as to what will be the result of this mixed infection. Some cases of malignant syphilis have occurred in tubercular subjects, but it has also attacked apparently robust persons. In a case of Petrini de Galatz with lupus of the face and buttocks, the syphilide took the form of the small follicular syphilide, which is so like lichen scrofulosorum, but this was probably only a coincidence. In a case reported by Étienne, the tuberculosis supervened on syphilis, the result was a general and enormous adenopathy. In Neisser's case of lupus and tubero-serpiginous syphilide, the chief interest lay in the diagnosis. Walter Smith* met with a curious combination of symptoms in a girl of eighteen previously healthy. Pulpy nodosities appeared first on the fingers, then psoriasis-like eruption on the body, which left scars; on the tip of the nose was undoubted ordinary nodular lupus which ulcerated; symmetrical exostoses on nose and fingers. He regarded all the symptoms as tubercular manifestations.

Mucous Membranes.—When it attacks the mucous membranes, it begins near external orifices, and generally by extension of the disease from the neighbouring skin, or it is at all events associated with skin lesions; but it may be primary, and I have once seen it beginning on the gum of a strumous child of two years old with no lupus elsewhere. Max Bender collected 380 cases of lupus from Doutrelepont's clinic, and found the mucous membranes involved in 173, or 45·5 per cent., but in only 6 were the mucous membranes alone affected. He found, however, that the disease had commenced in the mucous membranes in 31 per cent.; this is far more than is usually supposed. The mucous membrane of the nose was affected in 115 cases, of the lips

* *Brit. Jour. Derm.*, vol. ix. (1897), p. 187.

in 43, of the palate in 31, the nasal duct in 24, the conjunctiva in 21, the larynx in 13, the tongue in 1, the rectum and vulva in 1. Audry goes much farther than this. He had all cases of face lupus examined, and in every instance there were deep lesions of the nasal mucous membranes, and he came to the conclusion that the nasal mucous membrane was the starting point for the immense majority of cases of lupus of the face.

Its effects on the nose have been already described; on the mouth, extending inwards from the lips, granulating sores form on the inner side of the lips and on the gums, and generally project over the upper incisors; papillary growths are more frequent here than elsewhere, and separate the gums from the teeth; stomatitis is present more or less, and produces the superficial greyish patches, similar to those so often seen in syphilitics. In a few cases, of which I have seen one, lymphangiectodes of the mouth * has occurred with *L. vulgaris* of the skin. Punched-out ulcers on the hard palate are common, but caries of the bones never ensues. The soft palate and pharynx may be notably affected as in tertiary syphilis, but adhesion of the soft palate to the pharynx is less common than in syphilis, the lesions of which, in other respects, the cicatrices closely resemble. Spontaneous healing may occur sometimes, but only after many years. The tongue is very rarely involved; in Leloir's case † it presented a verrucose condition. In the larynx, it may affect the epiglottis extending from the buccal cavity, thence to the arytaeno-epiglottidean folds, and to the other points of the larynx, and may affect the voice in various degrees; but no danger to life need be apprehended, nor any destruction of cartilages; in rare instances, it is primary in this part. It is occasionally primary on the conjunctiva, or it may have spread from the lachrymal duct or from the cheek on to the inside of the lower lid, and thence on to the eye, where it forms granulations and extends like a pannus over the cornea, and may completely cover it. In the ear, it may spread along the external meatus up to the membrana tympani, which may be destroyed, and after various anomalies of hearing, fungating tumours may develop on the meatus and occlude it; it is, however, very rare for the internal ear to be involved, which is reached by extension along the

* Author's Atlas, plate lxxiv., fig. 5.

† *International Atlas*, plate iii.

Eustachian tube. Cases have been reported of its existence in the uterus and vagina.

Etiology.—Lupus is much more common in females than males—two to one is the accepted ratio in England, though, in my experience, four to one would be nearer the mark. It seldom begins before three years of age, though C. Fox met with five cases in the first year of life. It is said to rarely begin after puberty, but it is by no means so rare as is usually stated, and one of the worst cases I have seen was a case of undoubted nodular lupus vulgaris, which began on the forehead of a lady when she was forty-six years old, and spread over the whole face, scalp, and part of the neck. There were also a few small foci on the limbs, but here it showed very little tendency to spread. Active interference only made it spread more rapidly. Her general health was good, and there was no evidence of phthisis or struma in herself or her family. Dr. Campbell Pope sent me a man in whom it began at sixty-three, and the patches multiplied until in three years there were twenty-one on the face and trunk. The patient was otherwise apparently healthy. I have also seen it in a lady, commencing when she was sixty-three. Although much more common among the poor, no class is exempt, but its frequency varies in different countries. It is more common on the Continent than in Great Britain, and almost rare in North America. While the patient is the subject of phthisis in a moderate number (eight in thirty-eight of Besnier's cases), I have been astonished, since I have inquired into it, at the large proportion of cases in which a history of phthisis in one or more members of the family is obtainable; Hutchinson has made a similar observation. This does not hold good for America; according to Nevins Hyde of Chicago, in eighteen cases where the family history was obtainable, in only one was there a distinct phthisical history. The general health may be good, bad, or indifferent, but C. Fox* found that one-third of his cases had glandular enlargement, 15 per cent. had scrofulo-gummata and 8 per cent. joint or bone disease, and true *L. vulgaris* started in different instances in caseating glands, diseased bone, and scrofulous gummata.

Whilst the majority of cases of direct inoculation of tubercle bacilli take the form of ulcers or *L. verrucosus*, which is *par*

* *Westminster Hospital Report*, 1893.

excellence "inoculation lupus," there is no doubt that nodular *L. vulgaris* also may arise occasionally from direct inoculation.* In Lipp's case, the lupus was supposed to have arisen from the consumptive mother kissing the child's face on which there were rhagades.† Jadassohn met with a case in which a butcher inoculated his finger with a tuberculous ulcer from an ox, and true lupus appeared higher up the arm; he relates another case which arose on the tattooed surface of a woman's arm—the ink was moistened with the operator's saliva.

Dent records three cases in one family; they had all occupied the same bedroom, and two had slept together. I have had a case of a boy who had large symmetrical patches of lupus on the inner side of each knee, and auto-inoculation was probable. Clement Lucas relates the case of an attendant on a lady who had lupus, who was herself attacked with it on her nose; also of a Jewish infant, where it appeared on the penis after ritual circumcision. Many instances of this are on record, the operator having been phthisical, but it is seldom that the result was a true nodular lupus. Thus, in a group of nine cases at Yalta from this cause, they nearly all had ulceration of the cicatrix four or five weeks after the operation; one had lymphangitis, two died of consecutive pulmonary tuberculosis. Lucas's case of *L. verrucosus*, developing on the hand from having received a tooth wound on the fist, also illustrates the rule. Nevertheless, *L. vulgaris* of the lobes of the ears from piercing the ears has been several times recorded, Wolters's case from inoculating bacilli from sputum (footnote, p. 708) was said to be typical; and Corlett also had a case where the lesion began as a plaque on the forehead, then ulcerated, and the ulceration spread all over the face. *L. vulgaris* is seen occasionally in vaccination scars (see p. 475), herpes zoster scars, and those following an injury. Thus, in a woman of twenty-three, lupus developed on the scar of a cut on the nose, beginning very soon after the wound healed. Previous inflammation may favour the development and determine the position of the disease. All these modes are only the open door by which the tubercle bacillus gets in. Experi-

* W. Dubreuilh and Auché collected sixty cases of cutaneous inoculation of tuberculosis. *Abs. Ann. de Derm. et de Syph.*, vol. ii. (1891), p. 95.

† At U.C.H., 1900, No. 74, a child of two-and-half of healthy stock was brought with a pin's-head spot of lupus on the cheek. She was often kissed by a woman who died of phthisis in the hospital.

mental corroboration of these suggestive clinical facts has been furnished by Leloir,* who, by taking large pieces of lupus tissue and placing them, with due precautions against error, in the peritoneal cavity of guinea-pigs, produced general tuberculosis. Leloir said lupus is probably produced—

I. By direct inoculation from without. II. indirect inoculation by continuity from deep tuberculous foci. III. Inoculation by way of the lymphatics or veins passing through a tuberculous focus more or less remote. IV. Infection of hæmatic origin. V. Infection in utero. Methods one and two are most frequent, while five is extremely rare, but a case recorded by Sabouraud lends support to the possibility of it. A child of a phthisical mother died when eleven days old, and abundant miliary tubercle was found in the liver and spleen, the only organs examined.

The form which a tuberculosis of the skin takes is largely determined by—1. The mode of invasion of the skin, *i.e.*, from within, when it is more likely to be nodular, or without, when it will probably be verrucose or ulcerative. 2. Possibly the number of the bacilli inoculated and whether it is with or without pus cocci, although the suppositions fall short of proof. 3. The kind of soil or constitutional proclivities of the individual. Thus there can be no doubt that the so-called scrofulous predisposition very much favours the early suppuration and ulceration of the lupus. The scrofulous person is also much more likely to have caseating glands, and secondary lymphangitis, etc. A purely nodular lupus often occurs in an otherwise healthy person, and shows little tendency to ulcerate, and in some cases, not much to spread.

Although lupus is often aggravated by exposure to cold, and is generally worse in winter, there is no reason to believe that it directly excites it.

Multiple lupus very frequently follows specific fevers, especially measles; tuberculous glands probably soften under its toxin, setting free the bacilli into the circulation.

Thibierge records a case in which a quiescent lupus scar with some nodules was awakened to activity in thirteen pregnancies and during lactation, and then subsided until the next pregnancy. Other instances of activity during pregnancy and lactation are on

* See also Eve's "Experiments on the Rabbit," *Path. Trans.*, vol. xxxix. (1888), p. 363.

record, but the effect is not constant, some cases having improved during pregnancy and got bad again afterwards.

Pathology.—The lesions of lupus are due to a neoplasm of the granuloma class, consisting of a small cell infiltration which begins first in the deep part of the corium, and from thence gradually invades all the other skin structures. The cause of the process is now generally regarded as the irritative presence of tubercle bacilli. Koch first demonstrated the presence of bacilli, indistinguishable from tubercle bacilli, in lupus tissue, and the view that lupus is a chronic tuberculosis of the skin was greedily taken up, though Kaposi, Schwimmer, and some others strongly opposed such a theory. The bacilli exist in such very small numbers, one or two in a section perhaps, that they are often only to be found by careful examination of a large number of sections taken from the border of the growth. Cornil and Leloir, in a large number of sections taken from twelve cases, found only a single bacillus in a cell, and that from a case in which phthisis was present. It is strange that so much damage should arise from such a sparse distribution; but this may arise partly from the bacilli having perished in the older lupus tissue, though they are scanty even in the growing edge. In addition to the bacilli, all structures that are found in miliary tubercle are present in lupus, and these are particularly abundant in *L. papillomatosus*. Further confirmation that lupus is a tuberculosis of the skin is found in the violent, local, and general reaction to injections of the old tuberculin. It is, however, certainly at most a local tuberculosis, without any tendency to generalize.

Anatomy.—This has been investigated by Virchow, Auspitz, Kaposi, and a host of more modern observers. Although the modern nomenclature and interpretation are somewhat different, the cells being called plasma (Unna),* epithelioid, etc., the description of Kaposi is still one of the best accounts, and as it agrees with my own observations, it is that mainly followed here. Taking first a single recent general nodule, it is found imbedded in the deeper part of the corium, sharply defined from the rest

* Unna's *Histopathology*, p. 574, contains an elaborate description of this interpretation of the histology of lupus. *Plasma cells* (Unna) are more or less round, oval, or angular in shape, with a round nucleus generally situated excentrically. Their protoplasm is granular (granoplasma), and their nucleus contains, in addition to a nucleolus and a chromatin network, some five or more coarse granules arranged about the periphery. These details are brought out by special staining methods: polychrome, methyl-blue and glycerine ether (Unna), or methyl-green-pyronine and resorcin

of the cutis, and bounded by a dense fibrous tissue, the skin structures above the nodule remaining healthy.

The nodule has a framework consisting of a delicate fibrous reticulum with abundant vessels, the larger meshes of which are filled with round cells, with sharply defined, strongly staining nuclei, while the small meshes contain also some smaller cells, and many free nuclei. Giant cells are also present in varying numbers, but their importance has diminished, since they are now known not to be characteristic of tubercle, as they were thought to be when Friedländer, previous to Koch's discovery, advanced the theory, founded on their presence in lupus tissue, that it was a tuberculosis of the skin.



Fig. 41—Lupus vulgaris from nates. 2-in. oc., $\frac{2}{3}$ -in., obj. w. a.

a, thickened rete mucosum; *b*, *b*, *b*, round-cell infiltration separating fibres of corium; *c*, blood vessel; *d*, *d*, nodules.

As the cells in the centre of the nodules increase in numbers, the vascular supply is interfered with, and fatty degeneration and disintegration ensue in that part, and, by extension of this necrobiosis, ultimately nearly the

(Pappenheim).^{*} According to Unna and his followers, these plasma cells originate from fixed connective tissue cells (histiogenetic), but von Marschalko and others contend they are derived from the lymphocytes of the blood (hæmatogenetic). Plasma cells occur in lupus vulgaris, syphilides, etc.

^{*} Abs. of good paper by Pappenheim, etc., in *Brit. Jour. Derm.*, vol. xiv. (1902), p. 147.

whole nodule is absorbed or ulcerates, though at the periphery the new products may, according to Lang and Kaposi, organize into connective tissue and cicatrize, differing in this respect from leprosy and syphilis.

When this fibroid formation is highly developed it produces what Norman Walker calls fibroid lupus.

When the foci are numerous, as they generally are, they extend peripherally in the course of the vessels, coalesce, and gradually involve the whole corium of the region affected. In the epidermis, which soon becomes affected, the rete cells undergo proliferation and fatty degeneration; there is downgrowth of the interpapillary processes on the one hand, and encroachment of the lupus infiltration in some parts on the other, obliterating the boundary line between the palisade stratum of the rete and the papillary layer of the corium. More or less desquamation occurs, and by this means, or by suppuration, the lupus infiltration is laid bare and ulcerates. Norman Walker disputes the justice of calling the process ulceration, as he says the surface is always more or less covered with epithelium,



Fig. 42.—Lupus vulgaris from same section as fig. 33. $\frac{1}{10}$ obj. Powell, 2-in. oc.
a, fibro-cellular reticulum; b, b, multi-nucleated giant cells.

though often swollen and distorted, and he therefore wishes to substitute the word catarrhal, as it is comparable to the lung process. Although there is a certain amount of truth in this, the term chosen is not an acceptable one, and suppurative lupus is truthful and less objectionable.

Similar changes occur in the epithelia of the sweat and sebaceous glands and hair follicles; hence ensue atrophy of the papilla, falling out of the hair, occlusion of the gland ducts, and consequent retention of secretion, so that milium-like bodies are imbedded here and there in the corium. According to Lang, Stilling, and Jarisch, the reticulum, the vessels, and part of the infiltration are formed by proliferation of the cells of the vessel walls and lymph channels, and consequent outgrowths from them, while the rest of the infiltration consists of emigrant cells from the vessels. As occasional features may be mentioned, general hyperplasia of the whole of the tissues, resulting in elephantiasis, or the papillæ alone may enlarge enormously, and a verrucose condition be produced. Sometimes the epithelial proliferation is the striking feature, and that of the rete,

follicle, and sweat glands may coalesce, and form a sort of network, permeating the lupus infiltration. It is in such cases, that epithelioma may develop.

Diagnosis.—The diagnosis is easy when “apple jelly” nodules imbedded in the skin are present, or raised above it; when there are one or more inflammatory-looking infiltrations, more or less raised above the surface, moderately scaly, with a well-defined edge, and perhaps some of the aforesaid nodules near it; when with this there is more or less scarring, either atrophic or ulcerative, the latter chiefly where the skin and mucous membrane join; when, too, in such cases the disease runs an extremely indolent course and occurs in a child or young person, or if in an adult, the disease dates from childhood.

Use of Glass Pressure.—In a very early stage, when there is only a single nodule deep in the skin, or in a slight recurrence in a scar, lupus can be distinguished from an inflammatory papule by pressing on it with glass, when an inflammatory lesion is quite obliterated, while a lupus nodule with the blood squeezed out leaves a yellow spot still visible through the glass.

Whenever there is scarring present, with an infiltrating eruption, the diagnosis in a young, or at all events not elderly person, practically lies between three diseases, viz., lupus, scrofuloderma, and gummatous infiltration from syphilis, leprosy being too rare in this country to need much discussion.

In a *gummatous syphilide*, the disease almost always is acquired in adult life, ulcerates readily, spontaneously, and often deeply, with a sharp edge, and runs a comparatively rapid course, doing more damage in a few weeks or months than lupus will produce in as many years. In lupus, the disease generally begins in early life, runs a very slow course, and ulcerates only on provocation or when near a mucous membrane, and then superficially, and generally with a rounded edge; the secretion is scanty and inoffensive, the crusts thin and brownish, except in strumous subjects. Then lupus never implicates the bones of the face,* while syphilis often does, and the crusts in the latter are abundant and greenish, and the secretion offensive.

Corroborative evidence of past or present syphilis is nearly always obtainable on the one hand, while this is negative in lupus.

* They sometimes fall out from want of support by the destroyed soft tissues.

If, after taking everything into consideration, doubt still remains, a tentative treatment with iodide of potassium and mercury for a week or two will decide the matter, marked improvement resulting in syphilis, while lupus is unaffected, or only to a slight degree.

In *scrofuloderma*, caseous glands, or the scars left by them, are present, and the disease consists in a chronic dermatitis spreading from the softened glands; there is more or less ulceration, probably sinuses, and soft red undermined skin, but no translucent brownish tubercles in or near the infiltration, and there is probably other evidence of the so-called strumous diathesis. With such symptoms present, the diagnosis is easy; but sometimes lupus also starts from caseous glands, or at all events may develop in a notably strumous patient, and the two conditions merge into one another; the diagnosis may therefore be difficult, but is fortunately not then of practical importance, and does not modify the treatment.

In *leprosy*, it is only when the disease is in an early stage that any difficulty could arise. If there were any anæsthesia present, this, with the history of the patients having been in a leprosy district, would at once decide the diagnosis; later on the other characteristic symptoms of leprosy would be present.

Some cases of multiple lupus of the limbs, where the disease has involutioned in the centre and left rings, are remarkably like the early stage of some maculo-anæsthetic cases of leprosy without any other symptom. Leprosy may also begin as rings of the same colour and elevation with an atrophically cicatricial centre. In the latter, however, there is always partial anæsthesia in the centre, sometimes preceded by hyperæsthesia, but the difficulty lies in the fact that the dysæsthesia is not always pronounced, and with a very young or nervous patient, statements on relative sensibility of parts are not reliable. Possibly assistance might be obtained from the enlargement of the rings of the lepra being much more rapid. All doubt would be removed as the leprosy developed further, and difficulties would only arise when the patient had lived in a leprosy district.

Psoriasis.—A few cases closely resemble psoriasis. The infiltration is greater in lupus, the scaling less, and not in silvery crusts, the patches are comparatively stationary. Search may reveal more typical lupus patches, and there is more or less scarring in an old lupus patch, a feature which is infinitely rare in psoriasis.

In a patient of mine, a man of forty-five, there was a four-inch patch on the chest which had been forming for twenty years, very slowly enlarging, it had been repeatedly treated for psoriasis. There were several smaller and more recent lesions, one above the clavicle showed typical lupus nodules.

Lupus sometimes closely resembles *squamous eczema*. The length of time that the lupus has existed in a very limited area, its sharply defined and raised border, the greater amount of infiltration of the skin, its having been dry throughout its course, while it has not varied in intensity to a notable extent, and its tendency to scar formation, are all points in which it contrasts with an eczema patch.

In people past middle age, *epithelioma* might be confounded with lupus. The age at which the disease began, the position of epithelioma, its painfulness, its limitation to a small area, the induration round the infiltration or ulcer, are all points of distinction. The depth of the ulcer also is usually greater, the edge raised, everted, and hard, the surface uneven, and the more rapid progress and the involvement of neighbouring glands mark the malignant form of disease. The occasional supervention of epithelioma on lupus of long standing has already been mentioned. For the distinction from *rodent ulcer*, see that disease.

L. erythematosus is distinguished from *L. vulgaris* by the more superficial and less raised character of the eruption, the absence of ulceration, and the absence of nodules or papules in or near the patch; moreover, it nearly always begins much later than *vulgaris*, and is often symmetrical. It generally progresses more rapidly than *L. vulgaris*, and the sebaceous glands are often conspicuously involved in erythematous lupus, but not in *L. vulgaris*. As has been stated already, however, the differences in some cases are by no means striking, and careful consideration of every point is required.

In cases of doubt, where the diagnosis is important, Koch's old tuberculin injections may be employed; whatever its shortcomings as a curative treatment, there is no doubt that it may sometimes prove a valuable aid in diagnosis.* Two milligrammes (·002) may

* The above appeared in the second edition of this work. More recently (January, 1900), Neisser emphasises and strongly recommends the old tuberculin both for diagnosis and treatment in suitable cases. McCall Anderson corroborates from his own experience in the *Lancet*, June 16th, 1900, p. 1703.

be first tried, and then .005 or even .01 employed, and the smaller the dose which produces local and general reaction, the more strongly would it speak for *L. vulgaris*; a full dose like .01 may produce slight local reaction in a *L. erythematosus*, but not in syphilis, rodent ulcer, or epithelioma. It is not of any discriminating service in lepra or scrofuloderma; from the latter, however, the diagnosis is of more academic than practical importance, and lepra may react to it so violently that if this disease is suspected it should not be employed.

When the disease is reduced to a few nodules, doubts occasionally arise as to whether a red spot is a lupus nodule or not; in such cases, glass pressure (diascopy or phaneroscopy), as recommended by Liebreich and Unna, may be employed. The blood is pressed out of the vessels, and an inflammatory spot would disappear entirely, while a brownish dot would still be left in a lupus nodule. In rare instances, it might help a decision in a very early lupus spot. A watch glass or a large convex lens is a convenient means of applying the method, but a pleximeter-shaped instrument of glass is sold for the purpose. Unna claims that nodules in scar tissue which cannot be seen in the ordinary way may be brought into view by painting the skin with carbolic acid, which makes it transparent. Oil of cloves or camphor chloral is added to mitigate the pain of the application. Injections of old tuberculin reveal the nodules even more effectually.

Prognosis.—This depends on the age of the patient, the extent and duration of the disease, especially with regard to multiple foci, and the amount and character of the treatment. It is always a chronic, obstinate disease, tending to recur again and again, after apparent complete removal, but, when of limited area, complete cure may be effected by perseverance; the older the patient, the better is the chance of permanent removal, durable cures in childhood being of very rare occurrence, unless the diseased area is of sufficiently limited extent, and in such a position that excision or other radical measure can be employed.

Treatment.—While no internal treatment alone can be relied on for removing a lupus patch, much may be done to retard the progress of the disease, and favour involution rather than ulceration, also to delay, and even sometimes to prevent, the recurrence after the removal of the infiltration by local means.

The only agent which has a direct effect on lupus tissue when

given by the mouth is thyroid extract, or its derivatives, first suggested by Byrom Bramwell, and it is in my opinion the most important adjuvant to surgical or other local means that we possess. It should be given after as much as possible of the disease has been removed by local measures, beginning with five grains of the dried gland. Tabloids are generally the most convenient form; after a fortnight ten grains of the gland may be given, and if the patient is tolerant, in another fortnight it may be raised to fifteen grains per diem.

As it has to be given for a long period, a year or more, it is not advisable to give more than this, and some patients cannot take more than two tabloids a day. When once tolerance is established it can be taken for years without inconvenience or any symptom except that the patient gets thinner, but apparently only loses superfluous fat. If, however, the dose is too large at first, or a sufficient interval between the increments of the dose is not observed, the patient will be upset, sometimes seriously, with the well-known symptoms of thyroidism.* It may also be given with advantage where the disease is too extensive for local interference, or where, from its locality or for other reasons, efficient local treatment cannot be employed. Although I have never seen a cure under it alone, very considerable and striking improvement can often be obtained.

All measures, also, that tend to improve the general health should be adopted; good hygiene, in every sense of the word, as far as it can be secured, should hold a high place, while the patient should be carefully guarded against external irritants, such as cold winds, sudden alterations of temperature, and the like. Coming of a phthisical stock, as so many do in this country, and the not infrequent association with evident struma, cod-liver oil in full doses steadily persevered in, but with occasional intermissions, holds a high place. Iodine, either with the oil in grain doses, three drop doses of the tincture, or the potassium salt, or the syrup of the iodide of iron, is also of value, but only where thyroid is contraindicated.

Improvement in assimilation is the great aim, and therefore

* Thyroidism may be induced in sucking infants if the mother is taking the drug. In one of my cases, while there was loss of weight at first, subsequently there was an actual increase. In this case, with a most extensive ulcerating lupus a very large part of the disease healed soundly.

attention must be paid to the condition of the alimentary canal, and a nutritious dietary of easy digestion, drawn up when the digestive powers are weak. In proportion as the general health is good, and the patient often seems to be quite robust, is internal treatment of minor importance.

Injection Treatment.—Ordinary internal medication having such a limited scope, men's hopes of a specific being at last discovered were raised to the highest pitch, when the marvellous selective effect on lupus tissue of Koch's tuberculin, administered hypodermically, was first demonstrated. Disappointment has been proportionately great, now that it is shown that the good effect is for most cases only temporary; and although the new, or TR. tuberculin, gives similar results without the pains and penalties of the old toxin, the frequent failure to obtain a permanent cure has made most people throw it aside altogether. I am of opinion, however, from considerable experience in its use, that there is still a place for it in lupus therapeutics, although unfortunately a small and subsidiary one. The improvement is greatest in the ulcerative form in the young, and least in the purely nodular form in adults, in which sometimes the effect is only trifling.

The mode of administration is given under Syphilis. More rapid, and I think more permanent, results can be obtained by local injections, *i.e.*, injecting the fluid close to the lupus patch when that is accessible, and it is sometimes practically the only means of reaching otherwise inaccessible mucous membrane disease. Before commencing local injections, the patient's susceptibility should be tested by the minimal general injections.

Another use for it is, that after as much lupus tissue as possible has been removed by erosion and the subsequent application of carbolic acid, or other similar application, injections of tuberculin, in the back first, and later locally, appear to remove some of the lupus tissue which could not be reached from without, and thus assists in securing a longer freedom from recurrence, and a larger amount of permanent cure.

One thing, however, it will do better than other medical or surgical measures have been able to effect, *viz.*, remove the fibroid thickening * which is so often present when lupus affects the lip or other place where there is lax tissue. The hypertrophic scar tissue of lupus (the lupus fibroma of Unna) may also be flattened

down by it, sometimes revealing as it does so lupus nodules hitherto concealed. Thiosinamin and mercurial injections have also been used advantageously for this secondary thickening. While, therefore, tuberculin still has a place in lupus therapeutics, the time, trouble, and expense on the one hand, and the various other means at our disposal encroaching on its domain in various directions on the other, combine to limit its use to a comparatively small sphere of action.

The details of the method of its administration are given in the Appendix of Formulæ (Lupus Therapeutics).

Since tuberculin, injections of other substances have been advocated: cantharidinate of potash by A. Liebreich; chloride of zinc injections by Lannelongue; thiosinamin by Hans Hebra dog's serum because of its germicide action on the tubercle bacillus; calomel and perchloride of mercury injections. None of these, apparently, have come to stay, except, perhaps, the mercurial salts for a small number of cases. Their painfulness would render them inapplicable to children, while the dangers of injecting insoluble salts of mercury are set forth in the treatment for syphilis. While acknowledging their power in absorbing granulation tissue, I should not admit so dangerous a remedy into my armamentarium while less risky treatment is available; soluble salts of mercury are less dangerous. It is probable that the tubercle bacilli are not killed by the mercury.

Local Treatment.—It follows from what has been said that local measures are always necessary, and, as in all obstinate diseases, the number recommended is legion. I propose to mention only those that I have reason to speak well of, and to point out their indications and limitations. They may be classed under surgical, medical, and the light treatment.

The surgical operations are—1. Excision; 2. Erasion; 3. Scarification; and, 4. The galvano- or Paquelin's cautery.

Excision.—Wherever the position, *e.g.*, the nose, or the extent or multiple foci of the disease do not contraindicate it, there can be no doubt that excision extending about a quarter of an inch beyond the disease offers the best chance of a radical cure,

* A marked example of this was that of a patient of mine treated by my friend Dr. Heron in Victoria Park Hospital For Consumption, when tuberculin first arrived in England. Although the nodular lupus returned, the fibromatous thickening did not do so.

often in one operation. Where the disease is tolerably recent and is of small extent, the patch may often be excised and primary union of the wound obtained with a linear, and therefore the minimum of scar. Where the position or extent do not allow of this, the wound left may be filled up by Thiersch grafts, or the resources of plastic surgery may be called upon. There is scarcely any limit to the operation on the limbs if there is only one patch, but on the face it may be otherwise, and the patient's consent is often withheld.

Erasion may be used for large surfaces, or where the patient refuses excision, or for awkward positions, such as the orbit and nose. The instruments used are either Volkmann's sharp spoon or the ringed curette (Fig. 43). Except for minute foci I use the curette. The diseased tissue is scraped away at first readily, but the instrument should be used vigorously at the base and edges of the disease, until the resistance of the healthy as compared to the diseased tissue is evident to the touch. In cases of long standing, owing to the diseased tissue, pocketing in the meshes of fibrous tissue at the base, and permeating into the healthy area beyond the visible disease, the result soon after healing is seen to be imperfect, nodules of lupus showing up at once or some time after healing, and various supplementary measures are employed both at the time of operation and afterwards to reduce these recurrences to a minimum. At the time of operation, the base may be freely scarified, and iodoform or strong carbolic acid applied freely. The action of the latter is superficial, but being liquid it penetrates into interstices, and has the advantage of anæsthetising the wound after the first minute of application. I generally use a bundle of matches tied together and press firmly. The wound heals rapidly with a boric acid ointment, lotions giving so much pain each time they are changed. Anderson recommends rubbing the surface of the wound after erosion with potassa fusa, and after a few seconds neutralising with dilute acetic acid. Strong sulphuric acid neutralized with bicarbonate of soda is a similar application. Schlapoverski rubs the wound with solid nitrate of silver, and then covers it with collodion and ten per cent. iodoform; a chemical action takes place, and the caustic action is intensified. Chloride of zinc solution, forty grains to the ounce, swabbed for a moment or two, and pyrogalllic acid bandaged on, have also been strongly re-

commended; but the last three caustics give much pain for several hours after the operation, and I prefer the carbolic acid. The supplementary means after operation are tuberculin injections, or the administration of thyroid extract. The latter is the one I now chiefly use on account of its facility. The patient should be warned that for thorough success the erosion operation must be followed up by attacking the nodules as soon as they appear, otherwise in a year or two the patient will very likely be as bad as before. Each nodule should be scooped out with Vidal's knife, a small scoop, or drilled out with a pointed piece of hard



Fig. 43.—Curette for scraping lupus.

wood dipped in the fuming acid nitrate of mercury, or, if they are very numerous, multiple scarification, after freezing the part with chloride of ethyl or methyl, may be employed until the number of nodules is reduced. By perseverance in this way, at the same time continuing thyroid extract, very gratifying results may be obtained, and unless the surface is very large, permanent cure often results. Where repeated erosion has been used, a seamed scar sometimes results, but this may be improved by time, by the application of mercurial plasters of Vigo, Vidal, or Unna,

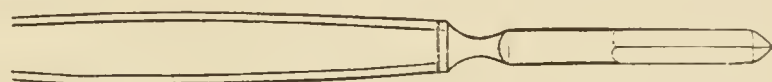


Fig. 44.—Vidal's knife.

and by thiosinamin injections in the neighbourhood, as described under keloid, or finally by shaving off the projections with a scalpel and applying Thiersch grafts, or by multiple scarification. There is some ground also for supposing that if the wound is kept aseptic during healing, hypertrophic scarring will be avoided.

Multiple scarification may be carried out with either a scalpel, or preferably a Vidal's knife (Fig. 44), for a small area, or for a larger patch by a sheaf of blades, of which there are several patterns, but Pick's (Fig. 45) is one of the best. The operation can be done under general or local anæsthesia, and is suitable for small areas on the face, where a neat smooth thin scar is of the highest importance, and no other operation can compare with

it in this respect. It appears to act by dividing large numbers of vessels, and so starving out the neoplasm, but its scope is much limited by the necessity of the repetition of the scarification a large number of times, twenty to thirty or more in some cases. The incisions should be made close to each other, and then another series at right angles, "cross-hatching," as it is called. Increased efficacy is obtained by immediately dabbing the cut surface with carbolic acid. Nodular lupus of the end of the nose and upper lip is often best treated in this way. Not more than three weeks or a month should elapse between the operations in most cases. Multiple scarification may also be used immediately after erosion, at the borders of an acutely ulcerating lupus when erosion is contraindicated, and to improve a hypertrophied scar.

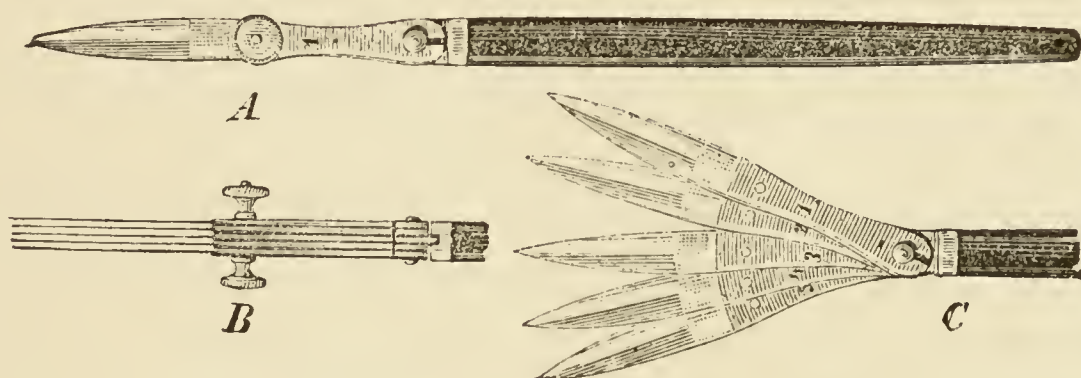


Fig. 45.—Pick's lupus scarifier and multiple puncture instrument.
A, B, closed for use ; C, open for cleansing.

Multiple Puncture finds its chief advocate in Veiel of Cannstadt, who devised a special instrument to facilitate its performance, which may also be used to supplement scraping. It is inferior as a primary treatment to both scraping and scarification.

The *Galvanic*, or *Paquelin's Cautery*, is used either to totally destroy the new growth, or as a more thorough linear scarification method, and has some strong advocates, notably Besnier and Hutchinson, but it has the disadvantage of burning both sound and unsound skin with equal facility, and the sense of touch in recognising the difference is unavailable, and a valuable means of thus judging how much to do is lost. Besnier, however, does not admit this. It is, in my practice, limited to recurrent nodules, and to lupus of the mucous membranes, where it is valuable for preventing bleeding.

Lustgarten and Gärtner advocate *Electrolysis*, employing bright plates for the negative electrode, with twenty-four Leclanché cells.

Jackson of New York is also in favour of this, but employs a coarse needle instead of a plate for the negative electrode. I have used this last method, independently, for cases where there were only a few recurrent nodules on the face, and for this purpose can speak in favour of the plan.

Phototherapy.—Of recent years, the therapeutic effects obtained by exposure to different sources of light have been employed so successfully in lupus treatment, that phototherapy bids fair to supersede many of the older methods in a large proportion of cases. They come under Finsen rays and Röntgen rays.

In the Finsen Method, sunlight where it is available, or in its absence the electric arc light, is concentrated by means of apparatus which cuts off the heat rays, and leaves only the actinic, viz., the blue, violet, and ultra-violet rays to act upon the diseased tissue, from which the blood must be pressed out, as the red corpuscles in the skin prevent the deep action of the rays.

Finsen's original apparatus was too cumbrous, expensive, and tedious in its application for private use, but the practicability of the method has been much extended by the lamp invented by Lortet and Genoud of Lyons, and its various imitations or modifications. In these the light is not brought to a focus, but the patient is brought close to the light before the rays diverge. By them also the time of exposure has been shortened to a quarter of an hour or so, the patient himself pressing against the rock crystal of the lens chamber to remove the blood from the part instead of a nurse being required. Even this time of exposure may be shortened, Bang of Copenhagen having found that iron electrodes acted more rapidly than carbon ones; but they are said to lack penetrating power, and are not so suitable for lupus as carbon electrodes. Both the Lortet-Genoud and the Bang lamps require a current of cold water through the apparatus, which would otherwise become too hot and burn the patient. Broca and Chatin have invented an apparatus with the positive electrode metallic and the negative of carbon, where no cooling is required, and have an improved method of compression. In fact, modifications are continually being made in these portable lamps, which are worked from the ordinary mains, the continuous current being preferable. It is only necessary, therefore, to indicate the scope and effects of the electric arc treatment, whatever may be the construction of the lamp employed.

The chief advantages are the painlessness of the treatment and its excellent cosmetic effect, the scar being thin, smooth, and uniform, and to these Leredde adds its homogeneity and penetrating power.

The disadvantages are the small area treated at each exposure, and hence the long time required, the exposures being usually very numerous, so that in a large area they may run into hundreds.

No effect is seen at first, but after from twelve to forty-eight hours inflammatory action sets in with redness, swelling, and sometimes bullæ, or oozing of the part directly exposed to the rays, and this inflammation is allowed to settle down or subdued with zinc ointment before the exposure is renewed.

The Finsen treatment* is not applicable to lupus of the mucous surfaces or to ulcerating or vegetating lupus, as to apply it successfully the part must be dry and the lens pressed hard against the part. If by radiotherapy or other means, *e.g.*, permanganate of potash, an ulcerating lupus can be dried up, then the Finsen treatment can, if thought desirable, be carried out to the conclusion of the case. Its most successful application is to a dry lupus of the face, in which it cures with the minimum of scar, and when not very extensive, in a moderate number, say fifty to eighty exposures.

On the limbs, surgical methods can generally be employed more rapidly and therefore more advantageously, since the character of the scar is less important. Local injections of tuberculin also have a good place in such cases.

Like all other methods of treatment, the cases must be followed up and recurrences dealt with at once, and only on these conditions can permanence of result be obtained, and it is obvious, therefore, that the method is still far from perfect, but time and experience will no doubt lead to further improvements both in technique and apparatus. The Copenhagen school claim to get a deeper action with their original apparatus than with the Lortet-Genoud and similar models, but French workers are not of

* For further testimony in favour of Finsen's treatment see Discussion at the Paris Internat. Cong., Derm. Sect., 1900, at the annual meeting Brit. Med. Assoc., 1901, in *Brit. Jour. Derm.*, vol. xiii., 1901. Leredde and Pautrier and others, *Annales de Derm. et de Syph.*, vol. iii. (1902), pp. 327, 329, etc.

this opinion. They consider that the depth of action depends chiefly on the compression being sufficient to render the part operated on quite bloodless.

In the Röntgen Rays treatment, or radiotherapy, the diseased area is exposed to the rays of a Crookes tube of not less than 6-inch spark gap for ten minutes daily, at 4 to 5 inches from the lamp, with a current of 4 ampères, a jet mercury interrupter, and a 10- or 12-inch coil. The healthy skin is protected by wearing a mask covered with lead foil, from which a piece is cut out corresponding with the diseased area; after six to twenty exposures, inflammatory reaction is set up, when pronounced, closely resembling that produced by the old tuberculin treatment, including the radiating red lines in the course of the lymphatics. The lupus area becomes deep red, swells up, and exudes a serous fluid, breaking down into a raw surface, which takes three or four weeks to heal under boric acid ointment and eucrophen. Then the process is repeated, and ultimately sound cicatrization results, also smooth and thin, like that of the Finsen treatment in most cases, provided the reaction has not gone too far. Some think that the exposures should be stopped before there is decided reaction, but then the result is very imperfect. On the other hand, it is not always possible to regulate the exposures to the exact amount of reaction desired, the inflammation progressing sometimes for two or three weeks after the exposures have been stopped on the production of a very moderate erythema, and then ulceration may be produced which takes weeks or months to heal. Besides controllable conditions, such as the spark length of the tube, not less than six inches, the time of each exposure ten to twenty minutes, and the proximity of the tube best at four inches, there remain uncontrollable elements, such as idiosyncrasy of the patient, and peculiarities in certain tubes which cannot always be ascertained beforehand.

It is this want of control that is the chief drawback, and Morris and Dore think the scar is not so good as that of the Finsen method, but this has not been my experience, which is very favourable to radiography, except as regards perfect control as to the amount of effect produced. On the other hand, it can be used over a much larger area at a time than the Finsen, the course of treatment is usually shorter, ulcerating lupus usually heals well and soundly, and mucous cavities can be treated

effectually. Probably, it is not so reliable in deep-seated lupus. In some cases, the two methods might be combined with advantage. Like all other methods, many repetitions are required.

High Frequency Currents, as first used by D'Arsonval, have been used with success in lupus by Oudin, Brocq, and others, and the action is said to be similar to that of the Röntgen rays, but their advantages over the preceding methods have not been proved for L. vulgaris, but they will be further reverted to under L. erythematosus.

Radium.—This rare and expensive element is said to give off emanations which affect lupus, and Danlos has experimented with it with some good results, but at present it is more of a curiosity than a practical method. A small quantity of the chloride diluted with chloride of barium is enclosed in a caoutchouc bag, and fastened to the diseased area. It has been used in lupus erythematosus with some benefit.

Hot Air Currents even up to 300° c. on the one hand, and *freezing* with ethyl or methyl chloride on the other, have had advocates, but have not had enough success to establish them, as generally recognized means of treatment.

Medical Methods of Local Treatment.—They may all be divided into two classes:—(1) those which protect the part or diminish hyperæmia, and so favour involution; (2) those which destroy the diseased tissue. Those of the first class have only a limited sphere of usefulness, but they are often serviceable in paving the way to more radical measures, which it is seldom judicious to urge upon the patient without some preliminary treatment. Calamine lotion, frequently and perseveringly applied, is one that is useful at first, for lesions on the face with signs of active inflammation, but which are not actually ulcerating; it lessens hyperæmia, partially conceals the eruption, and some degree of involution is often effected. Mercurial plasters, the emplastrum Vigo, or Vidal's emplastrum rubrum (Plasters, F. 6), may often be applied at night, and are very valuable adjuncts.

The inunction of simple ointments or soft soap, caoutchouc coverings, and most of the plasters recommended, soften and facilitate the removal of the scales or crusts, and pave the way for more energetic treatment. Brooke's ointment (Lupus Therapeutics, F. 1) acts in a similar direction, and produces a certain amount of involution if firmly rubbed in night and morning for some

minutes. If the skin becomes broken, a milder antiseptic ointment, such as boric acid, should be applied till it is sound again. A formula I have found useful is iodoform gr. 10, creolin ℥iij, lanolin ʒv, parolein or pure heavy paraffin oil ʒiij. The disagreeable odour of iodoform is favourably modified by the creolin. It should be rubbed in firmly, but not briskly. Europhen gr. 10, instead of the iodoform and creolin, is a good substitute, and nearly free from smell.

When operative measures are refused by the patient, or for other reasons they may not be desirable, caustics find a place. Those which have a selective action on the diseased tissue are preferable. They are arsenic, salicylic and pyrogallic acids, but their use is diminishing in favour of the light, and other treatments less disagreeable and painful.

Arsenical Paste (Hebra), (Caustics, F. 1).—This is spread upon linen, and applied evenly in strips to the affected part; a pad of lint is placed over it, bound on firmly, and allowed to remain for twenty-four hours; the part is then cleansed and the paste reapplied for another day, and again renewed unless there is already ulceration, when one or two applications may be sufficient. To avoid any danger of arsenical absorption only a limited area should be treated, say three or four square inches at the most, though it is used more freely in Vienna. The great advantage of this treatment is, that it picks out and utterly destroys the diseased tissue, whilst leaving the healthy tissue untouched, and the islands of healthy tissue thus left much facilitate the healing and diminish the scar. The disadvantages are, that the pain is very severe after the second day, and there is great swelling and œdema in the neighbourhood. These, however, soon subside after the removal of the paste. Its use is much restricted in favour of other applications.

Salicylic Acid, as an ointment in the proportion of ʒj to ʒj, was first suggested to me by a Mr. Marshall,* and I used it with success, and subsequently Unna brought it into notice, and introduced plasters (see Formulæ), made by Beiersdorf of Hamburg, with 30 and 50 grammes of the acid to the metre, and for lupus 40 grammes of creasote were subsequently added to diminish the pain. In these plasters, the active ingredients are formed into a magma with oleate of alumina, and spread on a gutta-percha sheet

* *Brit. Med. Jour.*, June 25th, 1884.

backed with muslin. It acts far more efficiently thus made, than when incorporated with the plaster basis in the ordinary way, such plasters being almost useless. It is most efficacious when applied to raw surfaces, when the disease is not very deep-seated, bound firmly on, and renewed once, or if there is much exudation twice, daily. A good, smooth cicatrix usually results, but the treatment is tedious and painful. An even better mode of using it is that of Treves, to add as much salicylic acid to glycerine as will make a paste, applied on lint. The pain does not last more than a few minutes, but there is no objection to adding creasote or carbolic acid (5ss to the ℥j), or, still better, painting on a 20 per cent. solution of cocaine before applying it.

Pyrogallic Acid has gained favour of late years in the treatment of lupus. Besnier brushes on a saturated solution of the acid in æther, and then covers it with traumaticin, repeating the treatment until all lupus points have disappeared. It acts by exciting suppurative dermatitis. Schwimmer also advocated its use after cleansing the part with vaseline, applying a 10 per cent. ointment two or three times daily for a week, and then putting empl. hydrargyri on the raw surface, repeating the process until no more nodules appear. It is not very painful as a rule, and is said, like arsenic, to pick out the diseased tissue. I have used it with moderate success.* Brocq finds the combination of pyrogallic and salicylic acids in 10 per cent. collodion the most efficacious method of using these substances.

Lactic Acid has been used in the form of the pure acid of a syrupy consistence. It is not of much use where the skin is sound, unless scarification or scraping precedes its application. It should not be kept on too long, or deep scarring may ensue. It is most useful for lupus of mucous membranes, and cocaine, painted on before applying the acid, prevents pain. A 20 per cent. solution is often strong enough for the mouth.

White of Harvard acts on the bacillary theory, and applies a solution of bichloride of mercury, one or two grains to the ounce, and says a cure is effected in a few months; an ointment of the

* It should not, however, be used for a very large surface at a time, as dangerous symptoms from absorption have arisen when it has been employed over a large area for psoriasis, and occasionally it acts with unexpected energy, and gangrene even has followed too prolonged an application.

same strength may be used continuously. Doutrelepon^t endorses White's opinion, using a solution of 1 in 1,000 under gutta-percha tissue, and both Auspitz and he have injected a 1 per cent. solution into the interstitial tissue in hypertrophic lupus of the lip, etc.

Permanganate of Potash is another drug applicable in certain cases, on the method of Schultz of Kreuznach. He paints on daily, or every other day, a 10 per cent. solution of permanganate of potash, until a thin, black crust is formed; the nodules are softened, and can be wiped away with cotton wool. The treatment requires six or eight weeks. It is adapted to superficial and recent cases. Butte uses compresses soaked in a 2 per cent. solution, and Hallopeau has used it also with good effect and recommends it in ulcerated and vegetating patches, but it is no good in non-ulcerating lesions. Spraying with hydrogen peroxide is also useful for ulcerating patches.

Other caustics, such as the Vienna paste of caustic potash and unslaked lime, chloride of zinc paste and the solid stick of nitrate of silver for ploughing up the diseased tissue, are given up in favour of less barbarous agents, as they are very painful for hours, and the first two are non-selective in their action.

Although these are not a tithe of the measures that have been recommended from time to time for this obstinate affection, they are those which in my opinion are the most efficacious, and while no one treatment is the best for all cases, the methods I use most, apart from the light treatment, are excision or erasion on the mixed method, the acid nitrate of mercury applied with a piece of wool, and salicylic acid ointment, paste, or plaster.

Thus in an ordinary case of lupus, if I had a free hand, unless time and money were no object, when Finsen or Röntgen rays would be tried, I should operate at once if the patient were in good health, as he often is. But if his circumstances did not permit it, or it was not deemed judicious to suggest any operative measures before his mind was prepared for it, one of the palliative measures described or a salicylic acid preparation might be used for a time. If the operation were erasion, it should be followed immediately by the free application of carbolic acid or linimentum iodi to the wound, and the subsequent administration of thyroid extract for a long period, or tuberculin injections before the wound has healed. If the mucous membrane of the

mouth is involved, I should attack it with the galvano-cautery or lactic acid. If there were any thickening of the scar after healing, repeated scarification followed by the application of mercurial plaster would improve it, or thiosinamin injections might be tried, and Finsen light is also of use in thickened scars.

Recurrent nodules would be bored out with a match-end dipped in the fuming acid nitrate of mercury, or with nitrate of silver crayon. Unna prefers the liquor antimonii chloridi, and leaves the match-end in for forty-eight hours. If the skin over them were hard, Vidal's knife rotated or Morris's screw might precede the caustic; or a hard-wood German toothpick is a very good substitute, and this could be dipped in the acid. An ulcerating lupus, spreading rapidly, is best treated by deeply scarifying the border three or four times, and rubbing in iodoform directly after each scarification. Possibly the Röntgen rays would have a good effect.

In a small number of cases, more or less acutely inflammatory, all strong measures seem rather to aggravate than cure, and milder applications, at all events for some time, answer best. Compresses should be bound on, wet with one of the following lotions: lead lotion $\mathfrak{m}\text{x}$ to $\mathfrak{m}\text{xxx}$ to $\mathfrak{z}\text{j}$, perchloride of mercury \mathfrak{i} in 2000, boric acid in saturated solution, chlorate of potash 5 or 10 grains to the $\mathfrak{z}\text{j}$, chloral gr. 5 to the $\mathfrak{z}\text{j}$, or weak Condyl's fluid (red). Calamine lotion is another good application applied three or four times a day and allowed to dry. When the acutely inflammatory symptoms have subsided by these means, more radical treatment may be proceeded with.

LUPUS VERRUCOSUS.*

Synonyms.—Tuberculosis verrucosa cutis; Verruca necrogenica; L. scléreux (Vidal).

Definition.—A form of tuberculosis of the skin in which there is warty development on an infiltrated but not nodular base.

Although not going so far as McCall Anderson, who considers L. verrucosus as separate an affection from L. vulgaris as is L. erythematosus, the clinical differences from L. vulgaris are so considerable, that it conduces to clearness of conception to

* Author's Atlas, plates lxiii., fig. 4, and lxviii., figs. 2 and 3.

consider them separately. Pathologically the number of tubercle bacilli present is greater than in *L. vulgaris*, and they are proportionately easier to find.

It is rarer than *L. vulgaris*, and is the form of disease usually assumed when tubercle is accidentally inoculated in the skin. *Tuberculosis verrucosa cutis* of Riehl and Paltauf comprehends the cases of *L. verrucosus* inoculated from animals in butchers, etc., while *verruca necrogenica* represents the anatomically identical local tuberculosis that is sometimes produced on the hands of those who make post-mortem examinations.

Clinically the lesion is a slightly raised, infiltrated, and reddened plaque, forming the base on which there is a firmly adherent warty crusting. This crusting may be fairly uniform or much broken up into craggy masses, depending on the degree of enlargement of the subjacent papillary growth. The crusting varies in superficial extent, and may in very indolent cases cover the entire lesion and be the only feature visible, as if it were merely a diffuse wart, or, as more frequently happens, the inflammatory-looking base extends to a greater or less extent beyond the warty covering. There is a complete absence of the characteristic soft, reddish-brown nodules of *L. vulgaris*, the lesion being very firm to the touch. It is very liable to inflame from time to time, and pus may then be squeezed out between the sulci of the horny crust, giving a relief which the patient often finds out for himself. It tends to slowly enlarge peripherally, and may persist for a great many years, though it is said to be more liable to give rise to pulmonary or other visceral tuberculosis than other forms of lupus. It attacks the limbs, especially the hands and feet, less frequently the face, and very rarely the trunk. There is generally only a single lesion, but it is not uncommon for it to be multiple, and I have seen fifty lesions on the limbs of a boy of ten, and twenty in a child of three; in fact, it is the most common form of multiple lupus, and the one in which the lesions most frequently appear simultaneously or nearly so. Some of these multiple cases where the warty character is only slightly developed may be mistaken for psoriasis, but there are no scaly crusts, and what there are adhere, and in fact, send processes downwards which make it very difficult to pick them off.

In exceptional cases, it ceases to enlarge, involution sets in

from the centre outwards, and ultimately produces a spontaneous cure, but not without leaving a scar. In a few cases, it occurs in a band or streak along the limb.*

Etiology.—It generally commences in early life, and a febrile illness, especially measles, is a frequent antecedent of the multiple cases. The probable explanation is that the toxin of the exanthem leads to the softening of a tuberculous gland, and the liberated bacilli are sent broadcast over the body, but that does not explain the concentration of the lesion in the limbs. The single lesions probably arise from direct inoculation.

The so-called *tuberculosis verrucosa cutis* is most frequently seen in butchers, cooks, coachmen, and others who have to do with animals dead or alive; and Fabry† has shown that it is also very common in miners, who frequently get slight abrasions on their hands and inoculate these from their own nose and mouth. The *verruca necrogenica* is seen chiefly in post-mortem porters, pathologists, doctors, and others who handle dead bodies, and both these forms affect chiefly the knuckles, interdigital folds, and occasionally other parts of the hands and forearms. A good example occurred on the knuckles of a post-mortem porter at the East London Hospital for Children, and is depicted in plate lxviii., fig. 3, of my Atlas.

When first seen by me, it had been present five years. Soon after he began post-mortem work, it started on the first knuckle of the left hand, where he had knocked off a piece of skin. It began as a red, slightly raised, flat papule, on which there was no pustule until some time afterwards. The pustule dried into a scab, which eventually fell off, leaving the surface slightly irregular. The papillæ became gradually more prominent, and the lesion spread at the periphery, but two or three years elapsed before it got quite horny. Meanwhile the disease had started at two other foci on the third and fourth knuckles, and, progressing at the rate of about half an inch a year, reached nearly all across the hand, where it formed an irregular, flat, warty mass, raised up about a quarter of an inch, with red, slightly raised, sinuous border and sloping edges. On picking off part of the

* Hutchinson's smaller Atlas, plate cxxix. Plate xiv. illustrates a similar distribution, but with different clinical features. See *Lupus Marginatus*.

† "On the Occurrence of Tuberculosis Verrucosa Cutis in Coal Miners," by J. Fabry, *Archiv f. Derm.*, vol. li. (1900), p. 69.

horny covering, the red, slightly moist, hypertrophied papillæ came into view; and at times the patch itched and felt hot, and then, on lateral pressure, a little pus escaped between the papillæ, and gave him relief; otherwise it gave him no trouble unless he knocked it.

Pathology.—The lesion is acknowledged to be the result of the irritative presence of tubercle bacilli in the skin, and they are present in greater numbers than in *L. vulgaris*, while they are not so numerous as in the acute tuberculous ulcer. The

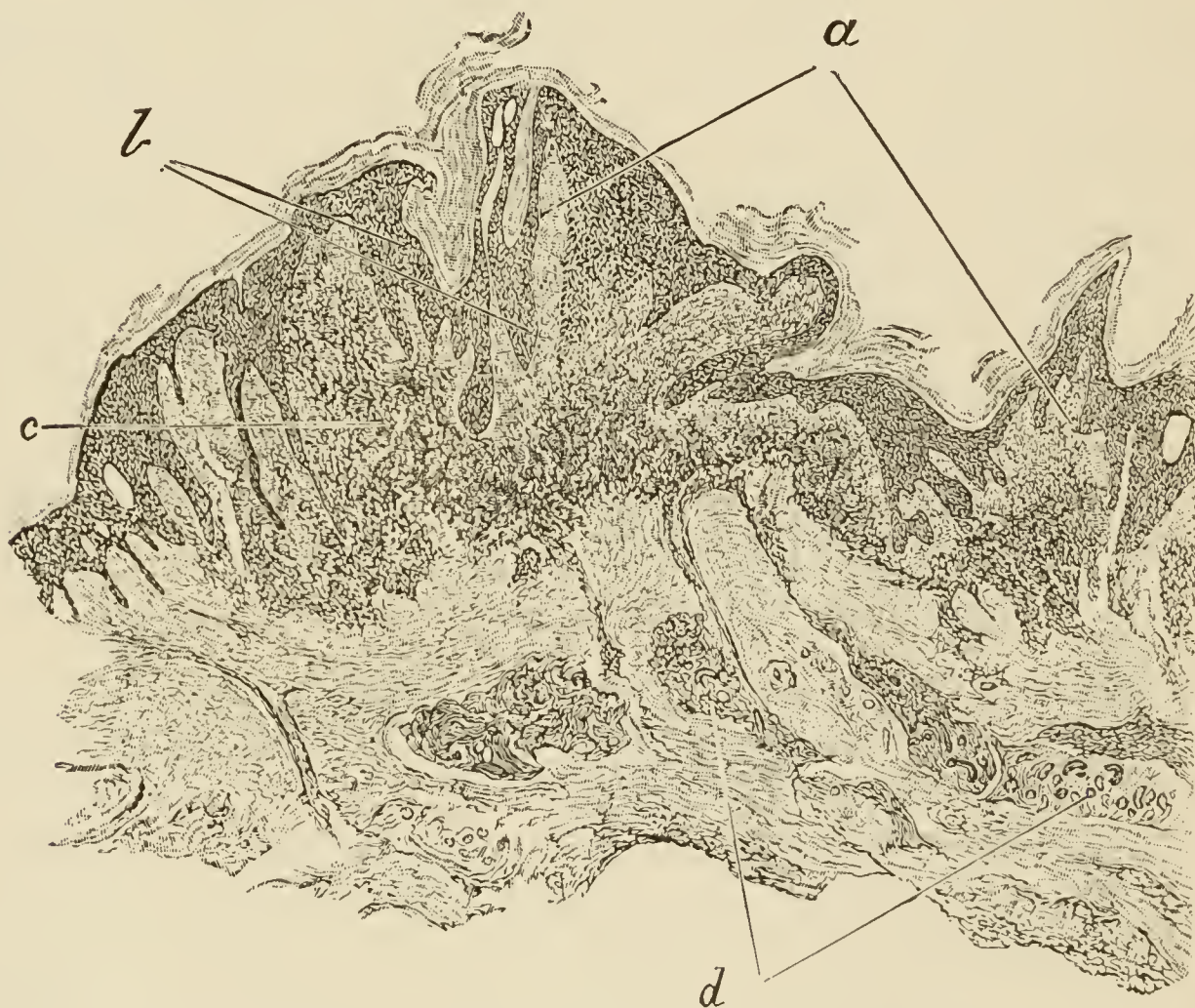


Fig. 46.—Lupus verrucosus from the back of the thumb.

a, enlarged papillæ; *b*, down-growing interpapillary processes; *c*, plasma cells almost limited to the papillary layer; *d*, coil glands. There is considerable increase of the horny layers. Tubercle bacilli were present in moderate numbers. $\times 50$.

alliance of the different forms of tuberculosis of the skin is shown by the occasional association of *L. verrucosus* and *L. vulgaris* and scrofuloderma in the same individual. E. Knickenberg* collected a series of cases at the Bonn clinic.

* "Ueber Tuberculosis verrucosa cutis," *Archiv f. Derm. u. Syph.*, vol. xxvi. (1894), p. 405. Good abs. *Annales*, vol. vi. (1895), p. 163. See also Rosenthal in *Archiv*, vol. xlviii. (1898), p. 151. Abs. in *Annales*, vol. x. (1899), p. 510.

Anatomy.—Riehl and Paltauf* investigated the histology of cases inoculated from animals, and described it as a tuberculosis of the skin, intermediate between lupus and tuberculous ulceration. In the upper part, the structure is much the same as in the papillary growths of ichthyosis hystrix, while in the papillary vascular layer, besides foci of inflammation, there were sometimes veritable miliary abscesses, the source of the pus occasionally observed in the course of the affection. There were also caseating nodules, with the structure of tubercles, containing giant and epithelial cells, within which were bacilli, with the staining reaction of tubercle bacilli, and a few were also found free in the granulating tissue. These bacilli were more numerous than in lupus tissue, but by no means abundant, four or five in a nodule at the most; cocci were also present in the inflammatory tissue. These authors also found the same changes in "Verruca necrogenica"; and Unna† found that *L. verrucosus* was anatomically as well as clinically identical with these lesions. Fig. 46 shows a lesion I examined.

Treatment.—If the lesions are multiple, scraping with a sharp spoon, and the subsequent application of pure carbolic acid is the best plan, but for a single lesion less severe measures are effectual. The horny covering is first to be got rid of by applying repeatedly, for some days at a time, the strongest salicylic acid plaster of Unna, and this alone will get rid of a good deal of growth; the rest is destroyed with the fuming acid nitrate of mercury, applied with a piece of wood. The acid should be applied to only a small portion of the growth at a time, as it is in some cases, very painful for some hours. The Atlas case, one of the most extensive I have seen, was quite cured by these means.

Lupus Marginatus, Hilliard's Lupus. Under these names Hutchinson‡ has described a rare form of disease of which he has seen four cases. In three of the four the disease began on the hand and travelled in a line rather quickly up the extremity to the shoulder. The initial patch was the largest and suggested local inoculation. One woman was past forty at the onset; the others began in childhood. There was but a scanty history of tuberculosis in the patient and family. The majority of the component patches were discrete and oval, or crescentic in a narrow line on the forearm and arm. In the type case, the patch

* *Viertelj. f. Derm. u. Syph.*, 1886, Heft i., p. 19, with coloured plates of histology.

† Unna's *Histology*.

‡ Plates xiii. and xiv. of Hutchinson's smaller Atlas, and four cases are recorded in a lecture, *Polyclinic Journal*, vol. ii. (1900), p. 104.

over the ball of the little finger was rough and thickened and raised a quarter of an inch above the level, not ulcerated, but with an adherent scaly crust dipping into minute depressions on the surface, thus resembling *L. verrucosus*. On Hilliard's face there were numerous patches irregularly scattered over the lower part of the face and only a few on the forehead. They formed circles, crescents, and gyrate patches with delicately papular or nodular borders and a pale, thin, cicatricial area. The patches on his arm partook more or less of the characters of the face and hand patches, but in some places, especially on the hand, there were narrow lines of little nodules of corn-like structure.

There is no proof that the disease is tuberculous; in fact, the pathology is unknown. The disease persisted for a number of years, not altering materially after the first year. The only availing treatment was to destroy the lesion, which Hutchinson did by attacking the border with the actual cautery; one case was treated with *potassa fusa* successfully.

MILIARY TUBERCULOSIS OF THE SKIN.

This may occur in the form of nodules or ulcers, the latter being formed by the breaking down of aggregated nodules. It is a rare affection, and generally an acute manifestation, analogous to visceral miliary tuberculosis, with which it agrees in structure and bacteriology. The acute tuberculous ulcer* round mucous orifices, has long been recognised, but Kaposi,† in an analysis of twenty-two personal cases, has brought the fact into prominence that the affection may also be seen as miliary nodules in the skin, sometimes isolated and scattered throughout their course, but more frequently aggregated into plaques, generally confined to one region, most commonly the face (nose, cheeks, lips, and chin) and the ears, less frequently the buttocks, perianal region, elbow, forearm, etc.

In a man, æt. twenty-one, attending U.C.H. with numerous scrofuloderma lesions on the upper and lower limbs, the right leg became suddenly swollen and painful; he felt ill and was

* Neumann's Atlas, plate l., gives a good representation of acute ulceration of the nostrils.

† Kaposi, *Archiv f. Derm. u. Syph.*, vol. xliii. (1898), p. 373.

in bed two days. When seen a few days later, there were a large number of pin's-head to hemp-seed-size nodules scattered over the leg, which underwent very little change beyond slight enlargement in the course of a year.

In one-third of Kaposi's cases the skin alone was affected; in one-third the adjoining mucous membranes were also involved, the mouth, tongue, palate or nose and less often the vulva, vagina, or anus. The aggregated nodules may coalesce into a flattened infiltration, and break down into characteristic, very superficial, painful ulcers,* with finely denticulate borders, which, as well as the base, are pale red and covered with sero-viscous secretion. The borders also present, at once or ultimately, minute nodules, isolated or in several rows, which ulcerate and join on to the main ulcer, and thus produce the finely dentate borders. They are not present at all periods. The ulcers of mucous membranes have similar characters, rounded, dentate borders, with a greyish coating over the base and very often miliary nodules round them. One-third of Kaposi's cases developed acutely in three or four weeks, the others at various periods up to three or four years. Most cases are associated with tuberculosis of the respiratory organs; less frequently other viscera are affected, but it is not specially associated with acute miliary tuberculosis of the viscera nor necessarily towards the end of the internal disease, for they sometimes heal spontaneously, and more frequently if treated with local antiseptics and well-directed general treatment.

Iodoform would probably be the best application, and then boric acid ointment. Well-marked cases involving the skin, both developing acutely after measles, are recorded by Leichtenstern† and Pellagatti.‡ In the former's case, a child of four, there was acute miliary tuberculosis of the viscera, and on the face, trunk, and limbs, poppy seed to hemp seed, firm red, acuminate papules; some developed a vesicle, others a pustule on the apex of the papule, and the majority in from one to two weeks involuted with a small scale or crust; stained sections showed numerous tubercle bacilli.

* They are sometimes large; Hallopeau had a case of perianal ulcer, 5 in. × 3 in.

† *Münch. med. Wochensch.*, No. 1 (1897), p. 1. Full abs. in *Brit. Jour. Derm.*, vol. ix. (1897), p. 247.

‡ Pellagatti, *Giorn. Ital. d. Mal. Ven. e d. Pelle*, 1898, p. 704.

Chronic miliary and large nodules isolated or aggregated in the skin are met with from time to time, such as Dale James's case,* where there were two or three groups on the face, one of them on the nose; and Du Castel's,† where they were more numerous, and had been present two years in a child of five, immediately following measles. In neither of these were there visceral lesions.

Ulcers ‡ of slower development with abundant bacilli, also occur, and not necessarily with visceral tuberculosis.

In Jessner's case,§ in a girl of fifteen, reddish-brown, soft nodules had been developing for six years on the nose, head, back, and extremities. They were from one to five lines in diameter, the largest hemispherical, the smaller ones conical, some isolated, some grouped, some smooth, others framboesiform, but not moist; others were slightly scaly, but in most the surface was undisturbed, and were all alike. The microscope and inoculation into guinea-pigs and rabbits showed them to be tuberculous granulomata.

Liddell's case,|| was in flatly convex, smooth, firm, deep red, or violaceous half-inch patches on face, arms, and feet. Their tuberculous nature was first revealed by the microscope, which showed them to be made up of nodules of a tuberculous structure.

ACUTE TUBERCULOUS ULCER OF THE SKIN.

Symptoms.—This is a variant of miliary tuberculosis, and an extremely rare affection, Chiari having found it only six times in 7,000 post mortems, of which about 60 per cent. had died of tuberculosis. It is almost limited to the lips and other neighbourhoods where the mucous membranes join the skin, viz., the nose, the anus, vulva, and glans penis, but in one case, it was behind the ear. The lesions consist of one or more discrete, shallow,

* Dale James, *Sheffield Med. Jour.*, October, 1892. Abs. *Brit. Jour. Derm.*, vol. v. (1892), p. 58.

† Du Castel, *Annales de Derm. et de Syph.*, vol. ix. (1898), p. 729.

‡ Author's Atlas, plate lxii., fig. 3. An ulcer at inner canthus in connection with the lacrymal duct.

§ *Internat. Atlas*, Fasciculus xiii., plate xxxix.

|| *Brit. Jour. Derm.*, vol. xii. (1900), p. 319. Lupus circumscriptus (nodularis).

not painful ulcers, which form apparently spontaneously,* have an irregular, eroded, moderately infiltrated edge, and, when the crusts which soon cover them are removed, show a reddish-yellow, granular surface, with a thin scanty secretion. They never heal, spread slowly but continuously, and may coalesce with neighbouring ulcers, becoming, as in Jarisch's case, serpiginous; they may thus extend over an area of one or two square inches, but as a rule are small; when on mucous membranes, yellow miliary papules exist near them. Since they are usually only part of an extensive infection, especially of the lungs and the mucous membrane of the respiratory and digestive tracts, they have a comparatively rapid downward course of a few months at the most. In a case of Kaposi's, the skin lesions were thought to be primary, tuberculosis elsewhere being limited to the intestine.†

Diagnosis.—Their nature may be suggested by the evidence of tuberculosis elsewhere, especially when there are ulcers on the oral mucous membrane or tongue. In the absence of signs of general tuberculosis, the diagnosis is often only made post mortem, when the microscope shows, in addition to the uniform leucocytic or lymphoid infiltration at the base and border of the ulcer, close by, or even away from the original seat of disease, true miliary tubercles, consisting of lymphoid, epithelioid, and giant cells, often showing signs of commencing caseation. The best local treatment would probably be iodoform.

Tuberculous ulcers may be acute or chronic, primary or secondary. They are acute and primary in miliary tuberculosis, chronic and secondary in lupus vulgaris and scrofuloderma. These are often complicated with papillomatous development, or, more correctly, papillary growth, and are then often called lupus papillomatosus. Doutrelepon‡ also describes ulcers resembling varicosed ulcers, and others like a phagedenic chancre. According to Hallopeau and Wickham, tubercle bacilli may be pyogenic through their

* *Viertelj. f. Derm. u. Syph.*, 1879, p. 269. A very good representation is in plate l. of Neumann's *Atlas*. Plate lxii., fig. 3, of the Author's *Atlas* shows tubercular ulcer of slower development in connection with the lacrymal duct.

† In a case of phthisis reported by Vidal, hard bean-sized nodes preceded the ulcers on the breast, face, shoulder, and arm; these "tuberculomata" softened and discharged a whitish tough mass. Nobl, *Wien. med. Presse*, No. 31, 1900, p. 106, summarises the cases and condition to date.

‡ *Archiv f. Derm. u. Syph.* (1896), p. 278.

toxins, and produce pustulo-ulcerations, such as were formerly described as *impetigo rodens*, and the pus will produce tuberculosis in guinea-pigs, although no bacilli can be found in the original pus. This lends some support to the theory of some French authors of glæic tuberculosis with absence of separate bacilli. Serpiginous ulceration resembling the serpiginous nodular syphilide may be occasionally met with. Brownish-red infiltrated patches or nodules break down into centrifugally spreading ulcers with a grey or reddish-yellow floor, and more or less cicatriscation intermingled. The disease may affect a large or small area, and secondary lesions may form, and even visceral tuberculosis ensue.

SCROFULODERMIA. *

Deriv.—*Scrofa*, a sow.

Symptoms.—This term includes the various forms of suppurating dermatitis which attack strumous persons, who, almost always at the same time, present some of the other manifestations of this condition, such as enlarged, caseating and suppurating glands, conjunctivitis, or the scars of keratitis, blepharitis, rhinorrhœa, or otorrhœa, joint or bone disease, etc., and probably the characteristic physique.

The most common origin for the lesion is in the skin over caseating and softening lymphatic glands, which implicate the tissue over it, so that the skin becomes red, flabby, undermined, and even riddled with sinuses, which have been, or are in communication with the remains of the gland below. Ulcerations starting from this inflamed skin may slowly spread over the face and neck, which are the commonest positions for such lesions. In other cases, lupus vulgaris develops round a sinus constituting one form of scrofulous lupus. They may also occur independently of the glands, beginning as nodules (**Scrofulo-gummata**) in the subcutaneous tissue, which enlarge to hazel or walnut-sized tumours, and implicate the skin over them; this becomes red, but not very tender, while the tumours, which are almost painless, soon soften with obvious fluctuation. Even then, they may become absorbed and disappear, leaving only a red spot to mark their site. Or the tumour may be evacuated spontaneously or

* Author's Atlas, plates lxii., fig. 2, and xlvi., fig. 1.

by incision, and either heal up slowly, or form a spreading ulcer. The *scrofulo-gummata* may occur in the course of the lymphatics of a limb,* as in cases described by Lailier, Besnier, and Hallopeau.

The strumous ulcer varies; sometimes it has thin, red, undermined edges, with irregular base, and flabby, thin, pus-covered granulations; or there may be only a flat ulcer, with sharply cut edges slowly spreading, but seldom healing spontaneously; such ulcers may be seen sometimes at advanced age in people who bear the scars and features of a strumous childhood, and are liable to develop into rodent ulcer or epithelioma. These ulcers of senile struma † often take on a papillary hypertrophy, and may form the so-called lupus papillomatosus, ‡ which are, as I have previously stated, referable to scrofuloderma rather than to true lupus.

Sometimes in ulcers of moderate size the pus dries in enlarging layers as the ulcer spreads, and the limpet shell appearance of rupia is imperfectly produced, for the process being slower the crust is not so well formed as in the syphilitic lesion, but it used to be designated "scrofulous rupia."

When the soft tumours, above described, occur on the limbs—a frequent position—the bones are also sometimes implicated, especially those of the fingers. In such cases, they may form a tumour, embracing the whole segment, and the bone often becomes carious (strumous dactylitis). This results in considerable deformity, and is the lupus mutilans § of some authors.

In some of these cases, there is papillary hypertrophy and fungating growths, and the skin is of a livid red, pierced by numerous sinuses.

Strumous people are very liable to recurrent lymphangitic attacks at short intervals, often very like erysipelas. When this occurs in the lower limbs—its most frequent seat—a chronic lymphatic

* There is a model in the Museum of the College of Surgeons of this condition showing suppurating and other nodules extending up the arm from a lesion of the thumb. No. 170a, Derm. series; and plate xxxvi., *St. Louis Atlas*.

† Paget, *Clin. Essays*, "Senile Scrofula"; Howard Marsh, "Senile Tuberculosis," *Lancet*, April 16th, 1892; Colcott Fox, four cases, *Brit. Jour. Derm.*, vol. iv. (1892), p. 160; also Travers Smith, *ibid.*

‡ Author's *Atlas*, plate lxiii., fig. 3.

§ Plate lxii., fig. 2, Author's *Atlas*. Plate lxxi., Hutchinson's smaller *Atlas*.

œdema results, which leads to the development of elephantiasis of the limb, often with considerable papillary hypertrophy. It is also not uncommon in the face, and leads to permanent swelling of the features, especially the nose, cheeks, and upper lip. There may or may not be true lupus associated with it in the earlier stage; if there is, the condition called by older authors "lupus hypertrophicus" is produced. Under the name of primary tuberculosis of the skin, Dr. Hebb read a paper on a case of this kind at the Medico-Chirurgical Society in March, 1886,* in which the patient, æt. eighteen, had died with what was considered to be elephantiasis Arabum of the leg, and the skin showed microscopically, in addition to the usual appearances of elephantiasis, aggregations of large and small lymphoid cells with numerous giant cells interspersed, and in the lymphatics and among the aggregations of lymphoid cells, abundance of small bacilli, staining like those of tubercle.

Tuberculous Tumours. Doutrelepon^t described a case of tuberculosis of the skin which suggested a mycosis fungoides, or a sarcoma of the skin. The patient was a girl of six, who had had good health up to two years old, when she had measles, and the other disease began during the eruptive period, commencing as a tumour of the upper lip, followed by twenty-eight similar tumours on the chin, neck, trunk, and limbs. They were round, sharply defined, and of variable size. The smallest consisted of a uniform, circumscribed, smooth infiltration, which projected but slightly, while the largest projected considerably above the surface, and were furrowed and covered with crusts and scales, but all except those on the hands were smooth, while the hand-growths showed on removing the crusts and scales an ill-developed papillomatous structure. There were no ulcerations, cicatrices, or traces of scars on or near the tumours. They were movable with the skin. There was general slight enlargement of the lymphatic glands. Nothing in the family history, but injections with the first tuberculin showed local reaction, and the histology and inoculation experiments confirmed the inference that the neoplasms were tuberculous.†

* *Brit. Med. Jour.*, March 27th, 1886.

† *Archiv f. Derm. u. Syph.*, vol. xxix. (1894), p. 211. Abs. in *Annales*, vol. vi. (1895), p. 434.

Hallopeau quotes Riehl's, and Wickham and Gastou's cases* to show that similar tumours may aggregate and ulcerate.

Eruptions which might be included under the term tuberculides sometimes precede the gummatous lesions. Morris† showed a case at the Dermatological Society of a boy with a strong family history of tuberculosis, in whom six months previously there had been a transitory eruption of pimples, followed by the development of nodules of variable size and shape from a lentil to a nux vomica seed, better felt than seen, though over some of them the skin was bluish-red. They were firm, movable, and tender, and scattered over the limbs, especially the legs. Hallopeau‡ had a case which began with papules like lichen scrofulosorum, then became pustules, which coalesced into patches, some of them over two inches in diameter. The centre became depressed and ulcerated, while the periphery indurated, and one part became bullous.

Pathology.—It has long been assumed that scrofuloderma is a form of tuberculosis of the skin, and tubercle bacilli have from time to time been found in it; but as far back as 1884, Arloing§ found that scrofulous glands did not produce visceral lesions in the rabbit, while pulmonary tuberculosis did do so. He made further experiments which confirmed him in the view that tuberculosis and scrofula were not identical. More recently (1897), Ritter|| set himself the task of answering the question, "Does scrofulous tissue contain tubercle bacilli at the outset?" and his answer is in the negative, although he admits that in advanced cases tubercle bacilli are often found. His conclusions are: That the processes of tuberculosis and scrofulosis are not identical, but that the presence of scrofulosis affords a favourable soil for the invasion of the tubercle bacillus, and, as is well known clinically, a slow intermingling may occur, and that there exists a great affinity between the two processes.

Diagnosis.—Scrofulodermatous ulcers and nodules have to be distinguished from lupus vulgaris and syphilis.

* *Loc. cit.*, *Derm. Cong. Trans.*, p. 406.

† *Brit. Jour. Derm.*, vol. ix. (1897), p. 331.

‡ *Annales de Derm. et de Syph.*, vol. vi. (1896), p. 1093.

§ *Abs. Brit. Med. Jour.*, October 16th, 1886, "Annotation."

|| Ritter, *Allg. Med. Cent. Ztg.* (1896), lxvi., p. 654. *Abs. in Clin. Jour.*, July 27th, 1898, p. 279.

In *lupus vulgaris*, while the other strumous lesions are present, there is an absence of the characteristic lupus nodules, destruction, and not infiltration, being the distinguishing feature of scrofuloderma. When the two conditions are present together,* the ulcers are often deep, and the crusts thicker, greener, and more prominent.

Although most of the lesions are distinguishable, some seem to shade off, and the two conditions to be so mixed up together sometimes, that it is impossible to decide between them; but the treatment being on much the same lines in such cases, the exact diagnosis is not so important.

The distinctions from *syphilis* are the same as those between *lupus vulgaris* and tertiary syphilis. Leloir, † however, claims to have proved, both clinically and pathologically, that there were mixed conditions in which the lesion was a compound of scrofulo-tuberculosis and syphilis—in other words, that there was a *bonâ fide* syphilitic lupus. His paper has not carried conviction to my mind that this view is correct.

Treatment.—This should be directed to the general health, where possible, by improving the surroundings, *e.g.*, sending the patient to live at the seaside, the administration of cod-liver oil and iron in full doses, such as ʒss to ʒj of the syrup of the iodide of iron, with a liberal diet. Thyroid extract, given as in *lupus vulgaris*, should also be tried.

Locally, unhealthy fungating granulations should be scraped away with a sharp spoon and strong carbolic acid applied; undermined skin should be snipped off with scissors, sinuses laid open, and the ulcers dressed with recently prepared iodide of starch paste or iodoform, or the yellow or black wash applied under oiled silk. Where operative treatment is undesirable or unsuccessful, salicylic and glycerine paste with carbolic acid is very efficacious. Chaulmoogra oil internally, in the form of emulsion, in from ten to thirty-minim doses, and externally as an ointment one to three, has, where tolerated, an admirably good effect. For the multiple cold abscesses, sulphide of calcium pills, gr. $\frac{1}{6}$ *ter die*, may be given along with general measures, but each abscess should be

* Examples of this combination are in Author's Atlas, plates lxii., fig. 1., and lxiii., figs. 1 and 2.

† *Jour. des Mal. Cutan.*, vol. for 1891, September number, and long abstract *Brit. Jour. Derm.*, vol. iv. (1892), p. 165.

opened as soon as it is recognised, syringed out with carbolic lotion 1 in 40 and iodoform dressings applied.

ERYTHEMA INDURATUM.*

Synonym.—Bazin's Disease.

Definition.—A disease characterised by deep-seated gumma-like nodules, chiefly of the legs, of slow course, and tending to break down into ulcers.

Erythema induratum is a rare affection in England, but was described by Bazin as not uncommon in France under the name of "Erythème induré des scrofuleux." His description was, however, overlooked or misunderstood for some years even in France, and it is only in recent years that it has again attracted attention. It has no relationship to E. nodosum or other form of E. multiforme, although it bears some resemblance to the former. Bazin did not describe the ulceration, which is now recognized as a common feature.

Symptoms.—The disease attacks the calf, or immediately below it, more frequently than the front of the legs, and has often a single plaque, but there may be many. Bazin speaks of it as acute in its onset, bright red at first, but gradually assuming a violet hue, and it is either in a diffuse, ill-defined patch or in nodules. As I have seen it, the nodules may be either superficial or deep in the cutis, the latter often showing no alteration on the surface, and only perceptible to the touch as they become more superficial. They are bright red at first, fading to a more livid hue; the borders are ill-defined; and the lesions, which may be either in nodules or plaques, are from a quarter to an inch or more in diameter, always better felt than seen, and they may coalesce into large brawny infiltrations in the calf, and less frequently in the front of the leg. These indurations, with or without a slightly livid surface, may either be very slowly absorbed, or they may necrose and slough out, leaving a very indolent ulcer, strongly suggestive of specific origin. Strumous girls and young women are most liable to it, but it may occur in boys, and I have seen a marked

* Colcott Fox, *Brit. Jour. Derm.*, vol. v., (1893), p. 225, coloured plate, gives history and literature to date; and in *Trans. of Thirteenth Internat. Cong., Derm. Section, at Paris, 1900*, p. 115 and p. 113 Boeck, Colcott Fox and others discuss its relationship to tuberculosis.

instance in a man of thirty-six* of phthisical stock, but not himself consumptive. It had been going on from the age of eighteen at intervals, but the actual attack I saw was of seven weeks' duration. He had nodules and ulcers, the largest of the latter the size of a shilling, deep and sloughy. The case of Galloway's mentioned below was a man of twenty, and C. T. Dade's case was a man of forty-two. I have seen it in a woman over fifty, who had, however, suffered from the same thing when a girl. She had in addition lupus vulgaris of old standing. Colcott Fox has observed small suppurative nodules on the fingers (folliclis) associated with this disease in several cases. He and Galloway have also noted angio-keratoma in the same subjects as E. induratum, and Galloway's case also had folliclis, so too had J. C. Johnston's case. Hutchinson says that pustular ophthalmia is a feature of the disease, but his experience is not the usual one.

In a severe case of mine, in a woman, æt. thirty-seven, there were a few nodules on the upper limbs. Pringle and S. Mackenzie have also had cases affecting the arms, and Galloway had a case affecting all the limbs, shoulders, and ankles. The diagnosis of these cases was not absolutely conclusive. Pain and tenderness are usually absent, but may be marked. Œdema of the legs is not unfrequently present, but whether before or after the development of the nodules is doubtful. The cases, however, in which there is œdema, lividity, and diffuse induration from the stagnant circulation belong to a different category. The disease runs a very indolent course of months, or even years, with a tendency to recurrence. One of Hutchinson's cases lasted with intermissions for twenty years.

Etiology.—It is much more common in females than males, and in the second decade of life, and has not yet been noted much beyond the fifth. It is most frequent in winter, especially in those who have cold hands and feet (the chilblain circulation), and have much standing; hence washerwomen are frequent victims, especially in countries where they wash out of doors. A considerable number have evidence of tuberculosis in themselves or their family, but the tide of opinion has ebbed and flowed against the original view that it is a scrofulous disease, or that it should be reckoned as a tuberculide (see Pathology). Hutchinson con-

* Mr. F. T., Case Book F., p. 286.

siders it the former, Boeck the latter; and Hutchinson does not consider scrofula and tubercle identical, though often allied.

Pathology.—The pathology is still not beyond discussion, unless Thibierge's and Fox's experiments are considered to settle the question. The most modern view is that it is a tuberculous affection, due to the direct presence of bacilli, owing much of its characters to a defective circulation, as evidenced by its almost always occurring on the legs, and its greater frequency in those who stand much and are exposed to cold, especially in winter.

*Anatomy.**—Audry was one of the first to make a histological investigation, and found spontaneous local œdema followed by fatty degeneration. This was confirmed by Ewing in Dade's case. J. C. Johnston and Leredde also found perivascular changes, but none of them found "giant cells," or other proof of its tuberculous origin. Thibierge and Bavant, however, not only found giant cells, but successfully inoculated a guinea-pig and produced fatal tuberculosis in thirty-five days; and Colcott Fox and Eyre confirm this, both as regards giant cells and also fatal inoculation of tuberculosis in a guinea-pig.

Mantegazza† examined two cases histologically, and found granulomatous structure and giant cells, but no bacilli, neither by microscope nor by guinea-pig inoculation. He rejects the idea of tubercle toxins, and thinks that the lesions could only be produced by the bacilli themselves, though they be sparse and attenuated. He thinks it should be classed with the scrofulodermata, and not with tuberculides.

Whitfield reconciles these discrepancies by contending that there are two distinct affections included under erythema induratum: one of tuberculous nature, rebellious to treatment, coming on exclusively in young girls, and painless unless it has ulcerated; the other occurring in middle-aged women, less painful, more easy to cure, having nothing to do with tuberculosis, and corresponding to the nodular necrotic phlebitis of Philipppson. Audry, Galloway, and some others regard it as a chronic and sometimes ulcerative variety of erythema nodosum, but I think the clinical appearances and course are opposed to this. Neither can Whitfield's contention be considered as more than a general truth as regards age and sex, as my own adult male was an indisputable case, and there are others like it on record.

Diagnosis.—The prominent features are: its localisation to the

* Review by C. Fox, *loc. cit.*, and *Brit. Jour. Derm.*, vol. x. (1900), p. 389.

† Full review to date, as well as histology of his two cases, *Ann. de Derm. et de Syph.*, vol. ii. (1901), p. 498. Full abs. *Brit. Jour. Derm.*, vol. xiii. (1901), p. 438.

legs, especially the calves; the presence of gumma-like nodules often ulcerating; its chronic, almost painless course; and finally that most of its victims have a feeble circulation and come under the term scrofulous.

It differs from erythema nodosum in the following respects: it occurs more on the back than the front of the legs; its characters are indolent, but it tends to ulcerate; tenderness and febrile symptoms are absent; it has a long duration with relapses; and the number of lesions, although small at first, ultimately is large. There are no rheumatic associations, but those of tuberculosis and of a feeble circulation are frequent.

From gummatous syphilis, it differs in its etiology, duration, evolution, and finally, if there is still doubt, by its not responding to specific treatment; indeed, iodide of potassium often aggravates it.

Treatment.—Before ulceration has occurred careful but firm bandaging, with moderate exercise, is the right course, and Hutchinson says that the application of an ointment of hydrarg. bisulphuret gr. v., adip. benz. ʒj, is almost a specific; after ulceration, prolonged rest with the legs raised is indicated, together with tonics and good living, but the course is generally very slow.

LUPUS ERYTHEMATOSUS.*

Synonyms.—Seborrhœa congestiva (Hebra); Lupus erythematosus; Lupus superficialis (Parkes and Thompson); Lupus sebaceus; *Fr.*, Older authors; Scrofulide érythémateuse; Érythème centrifuge (Biett); *Ger.*, Lupus erythematosus.

Definition.—A cellular infiltration, producing various-sized, red, scaly patches, clinically resembling an inflammation, but with a tendency to atrophic scarring.

L. erythematosus is only half as frequent as L. vulgaris † in hospital practice, occurring only in 6·3 per 1,000, but in private practice it is twice as common, viz., nearly 18 per 1,000, against

* *Literature.*—Author's Atlas, plates lxiv., lxv., lxvi., lxvii. Plate xlii. *Syd. Soc. Atl.*, Duhring's plate c., Hebra's Atlas, plate viii., offer some of the best illustrations of the chief varieties.

† Bulkley finds it more common than L. vulgaris in America, and Kopp in Munich met with thirty-five cases out of eight hundred of all forms of skin disease.

9·8 per 1,000 *L. vulgaris*. It was described by Biett, Hebra, Parkes, Thompson, Cazenave, etc., under various designations, but that of Cazenave has displaced all others.

Clinically it may be divided into four varieties :—

1. Circumscribed or discoid ;
2. Diffuse or disseminated ;
3. Telangiectic ;
4. Nodular.

Symptoms.—The **circumscribed** or discoid is the most common form, attacking chiefly the head and face, especially the nose, cheeks, and lobes of the ears, often symmetrically. Whilst no part of the body can claim absolute exemption, the next most frequent seats, in addition to the bridge of the nose, cheeks, and ear lobes, are the tip and alæ of the nose, the orbits, the lips in all parts, the scalp, leading there to permanent loss of hair, and the back of the fingers and toes. In the early stage, it usually appears as isolated or grouped, small red spots, about one-eighth of an inch in diameter, with a yellowish spot and a small, closely adherent scale, evidently sebaceous in the centre, and when this scale is removed, it is found to dip deeply into the dilated sebaceous gland-duct, in which it forms a plug. This is the stage which Hebra first described as *seborrhæa congestiva*, or primary eruptive spots ; these spots slowly extend peripherally, and ultimately coalesce into one or more reddish patches of varying size, still scaly, and with conspicuous yellow sebaceous plugs. These patches often present a dirty yellowish-white appearance, rough to the touch from the horny plugs in the follicles, while the border of the patch is red, and raised above the central portion. This condition is most marked on the nose, but is also seen on the malar eminences and in the scalp ; it is the *L. sebaceus* of Hutchinson. When it is more uniformly inflammatory, the patch, which is only slightly raised above the surface, but has a well-defined border, continues to enlarge, undergoes involution in the centre, which sinks down and ultimately may clear away completely. It then leaves only a thin white cicatricial area, with a red raised border about one-eighth of an inch thick, which is often still studded with horny comedones ; or, if the involution be incomplete, it remains slightly reddened, with closely adherent scales. Not infrequently, the nose and cheek patches enlarge until they meet and form one

large patch, resembling a butterfly in outline ; but the disease is usually of many months' or years' duration before it has attained to this size.

Another mode of commencement is that of well-defined, very bright, uniformly red spots, which become raised patches, hot to the touch, and slightly desquamating. This erythematous aspect is very persistent as a rule, but may, either spontaneously or by treatment, clear away without leaving a trace behind ; but more frequently there is some atrophic scarring. I have also seen it as persistent red plaques, like an erythema exudativum, the epidermis being unaffected. This last form is very rare, and the other erythematous variety is more often seen in the disseminated than in the circumscribed form. In these modes of commencement, the follicles are not primarily affected, as in the sebaceous form. In the scalp, it also begins in the follicles.

Whilst, as a rule, there is only slight scaliness most marked at the border, in others there is a distinct horny, closely adherent crust covering the whole surface, but with a bright red border beyond. When the back of the hands is affected, it often takes this crusted form, with red borders. In a case of Hallopeau's,* a man of sixty-one, a warty development occurred, something like that of *L. verrucosus*.

When the patches coalesce, irregular or gyrate patterns are produced, but they do not enlarge indefinitely, but after a variable time become stationary or involute still further, even the borders becoming less red and prominent. Ultimately, in a few fortunate cases, nothing may be left except the thin white scars ; yet even then recurrence may take place in the scar, and by this means, and by the formation of fresh patches, keep up the disease for an indefinite time. Spontaneous ulceration is exceptional, except in the lobes of the ears and on the scalp. As a rule, in this class of case, there is no disturbance in the general health, but complications may occur, such as erysipelas, and, indeed, sometimes the lupus appears to date from an attack of erysipelas. On the other hand, erysipelas may produce a very rapid involution of the disease. In the case of a young woman with crusted *L. erythematosus* over almost all the face, an attack of erysipelas was followed by the complete disappearance of the disease over

* *Ann. de Derm. et de Syph.*, vol. iii. (1892), p. 206.

almost all the affected area, except a small patch on each cheek, leaving a white thin cicatrix. Unfortunately, the patches that were left slowly spread, until a great part was again involved, but it was never over so large an area, nor was it so crusted, as before.

In the diffuse form,* *L. disseminatus* (Hebra), the patches are much more numerous, but each commences in much the same way, except that the erythematous mode of onset is more frequent than the seborrhœic. The patches nearly always begin on the face, and, in addition to the positions already enumerated, may form in any and every part of the body, usually attacking the limbs before the trunk, so that the eruption by coalescence may, in rare instances, become well-nigh universal. As a rule, it involves large surfaces, gradually invading one place after another, though by no means continuously.

In this form, the disease may be acute, either from the first, or successive acute outbreaks may supervene upon what was apparently an ordinary chronic and localised condition. The initial lesions are covered with crusts instead of scales, and when closely aggregated, resemble a pustular eczema, the differences being that the elementary component lesions are always discernible, the crusts very adherent, and when removed, reveal the patulous sebaceous openings. These acute cases are always accompanied by marked febrile symptoms of an irregularly intermittent type, with severe headache and boring pains of the bones and joints. Kaposi also describes persistent erysipelas-like swellings of the face with typhoid symptoms, a temperature of 104° F. with coma, and a mortality of 50 per cent.

In a case under Hallopeau,† the eruption, at first only on the face, progressively invaded the trunk and limbs. The outbreaks of eruption were like a persistent polymorphous erythema, sometimes with vesicles or bullæ, and always preceded and accompanied by intense itching. The case was thought to be an early stage of mycosis fungoides, but subsequently the diagnosis became clear, some of the patches disappearing, and others becoming cicatricial, and with the typical characters of *L. erythematosus*.

* Kaposi's Hand Atlas, plates clxxxix., cxcv., cxevi., acute bullous febrile type, like persistent erysipelas of the face, cxcvii., cxcviii.

† *Ann. de Derm. et de Syph.*, vol. for 1891, p. 389, and abs. *Brit. Jour. Derm.*, vol. iv. (1892), p. 123.

Besnier, records a similar case.* Kaposi and Abraham have also had cases with bullæ. In a case of my own, æt. thirty-six, it followed uræmic convulsions as a general erythema in thumb-nail-sized discs, in which condition I first saw her in consultation with Mr. Bailey. She recovered from this, the albumin dropping from one-third to a trace, and then lupus erythematosus developed on the orbits and cheeks, then over the whole scalp, which was denuded of hair and became cicatricial. Subsequently it extended to the extremities and trunk, but I only saw her once in this stage. The eruption was erythematosus for the most part, but in some places scaly and crusted. She died about four months from the onset of the lupus development, probably from the old kidney disease.† This occurrence of albuminuria with widespread disease has also been noted by Abraham, Sequeira, and others, and should be looked out for in acute cases.

Kaposi describes the following local complications of the acute and subacute cases:—(1) Sometimes, preceding the development of “the primary eruptive spots,” subcutaneous, deeply seated, doughy, painful, and tender, nut-sized nodules appear while the skin over them is still normal, and disappear when “the primary eruptive spots” are fully formed. (2) Nodular, œdematous, painful, doughy swellings, on which L. erythematosus spots may or may not subsequently appear, develop on the skin and tissues round the joints of the hands, feet, knees, and elbows. (3) Very numerous “hæmorrhagic flat blebs,” from a lentil to a sixpence in size, disseminated or grouped round a central bulla, like a herpes iris; if the raised epidermis is removed, a hæmorrhagic point in the corium is still left, about which the eruption spot subsequently develops. (4) Swelling of the parotid and lymphatic glands in various parts, chiefly where the lupus process is most active; the swelling, as a rule, does not last long, but returns with each exacerbation, but suppuration is rare. (5) The persistent erysipelas-like condition of the face, already mentioned, which is very liable to lead to a typhoid state and a fatal issue, or genuine erysipelas or lymphangitis, which may spread rapidly over a wide area and endanger life, or be limited or transitory. When erysipelas is severe, it aggravates the lupus disease, but complete

* Besnier, *Annales*, vol. iii. (1892), p. 455, both of the type of Kaposi in plate cxcvi., above mentioned.

† Private Notes, H., p. 611.

involution of the lupus may ensue, in this as in the chronic form, when the erysipelas lasts for some time.

The more chronic cases may have no defect of the general health, or there may be tuberculosis, anæmia, uterine or other derangements, either combined or alternating with the exacerbations and remissions.

In the third, or **telangiectic**, form,* which Kaposi does not appear to recognise, there may be no marked change of the surface, except a persistent circumscribed redness, which close inspection shows to be due to dilated vessels. It may be single, but is commonly situated symmetrically on both cheeks, very much of the size and shape of the red patch which the circus clown paints on his face (the flush patch of Hutchinson), and is not very noticeable to the eye, but on pinching up the tissues there is marked thickening. Sometimes a few comedones may be present, but they are never conspicuous, and there is no desquamation. These cases run a very slow course, and may remain for years with very little alteration. If involution should occur, a little streaky superficial scarring would probably be left. I have seen it associated with the usual form on the scalp. For Hutchinson's *Nævus lupus*, see *Angioma serpiginosum*.

The **nodular** form is very rare, and was first described in my second edition. I have seen several cases, and all but one in adult women; the youngest was a lady of thirty-four, who had had a red patch on the side of the nose, and the nodule developed on this a few months previously. In one of the most marked cases, about a score of roundish or oval, convex, distinctly raised nodules, from a hemp seed to a small bean in size, were scattered over the upper part of the face, nose, and lip. They were of brownish-red colour, very like *L. vulgaris*, but there were one or two on the auricle flatter and more like erythematous lupus, and on the back of the right hand there were two or three commencing nodules. A group on each side of the forehead, at the border of the hair, coalesced into a small patch, which was flattened in the centre, leaving a prominent rim, and subsequently was slightly cicatricial. The nodules enlarged very slowly, and showed very little tendency to undergo central involution. The patient was a stout lady of forty, dyspeptic, but with no organic disease in herself or her family. Subsequently all the patches

* Author's Atlas, plate lxxi., fig. 2.

involuted, apparently spontaneously. In a third case, an elderly woman, there were bean-sized patches scattered over the whole face; they were distinctly raised, and remained unchanged for years. Another case was in a man, æt. fifty-eight, who had three small nodules on the left lower eyelid, and another on the cheek; they were destroyed by electrolysis. Individually, the lesions are often remarkably like a single nodule of *L. vulgaris*, but from their general behaviour and distribution it seems more probable that they belong to this type.

Pringle* showed a case at the Dermatological Society of London, a woman, æt. fifty-four, with cancer of the uterus and symmetrical nodules on the nose, cheeks, and ears.

On the *hands and feet*, especially on the fingers and toes,† often affecting only the back of the terminal phalanges, but present elsewhere occasionally, the disease may begin as a persistent erythema, often looking like chilblains, but generally with some scaliness; but when involution occurs, whether spontaneously or as the result of treatment, there is always more or less atrophic scarring, though sometimes it is so slight as to be only in whitish streaks in the healthy skin. It may also be seen as plaques, with a horny adherent crust and a red border; painful fissures are apt to occur in this form, from loss of elasticity of the skin and the constant movement. In these cases, the sebaceous glands are not primarily involved, and indeed it may occur in parts where there are no sebaceous glands, such as the palms and soles. It is rare on the *mucous membranes* of the cheek and hard palate, where it is seen as soft red or grey exudations or whitish scars. I have had well-marked cases. Dubreuilh,‡ Galloway, and Leslie Roberts have recorded in-

* *Brit. Jour. Derm.*, vol. ix. (1897), p. 201.

† Nevins Hyde, "Lupus Erythematosus as it affects the Hands: a Clinical Study," in *Amer. Jour. Cut. and Ven. Dis.*, vol. ii. (1884), p. 321,—a good paper, with a table of thirty-five cases on the hands, and *résumé* of previous observations. Ohmann-Dumesnil collected forty-five cases; in twelve it began on the face, in the rest on the hands. The lesions, as a rule, affect the dorsal surface of the fingers, and do not extend beyond the nails. *Ninth Intern. Med. Congress*, 1887. The Sydenham Society's *Atlas*, plate xlii., shows the erythematous form, and Tilbury Fox's *Atlas*, plate xlv., fig. 2, the crusted form, very well. A vascular erythematosus form is shown in plate lxxvii., figs. 3 and 4, of my *Atlas*; but figs. 1 and 2 I now consider are not lupus erythematosus. (*Vide* Granuloma Annulare.)

‡ Dubreuilh gives a review of cases in *Annales de Derm.*, vol. i. (1900), p. 231.

stances. I have also seen it as irregular but superficial ulceration of the centre of the tongue, while on each side of the raphé were whitish pea-sized areas surrounded by a zone of deep redness. They were closely aggregated but discrete. Audry has also had a case affecting the tongue, in the form of two bright red symmetrical patches level with the rest of the surface.

The course of *L. erythematosus* is, as a rule, very slow; cases may last for ten or twenty years, spreading slowly, but often with long intervals of quiescence; but it is always liable to more rapid development. On the other hand, many cases get well spontaneously or as the result of treatment; and Hutchinson is of opinion that cases tend to get well as old age approaches, but I have seen it in septuagenarians.

Chilblain Lupus—Lupus Pernio. Hutchinson has described cases under the first name, and Besnier and some subsequent French writers cases under the second name.

Hutchinson's cases are forms of *lupus erythematosus* like those above mentioned. They attack chiefly the fingers and toes, and next the nose and ears, but may also involve other parts of the face and forearms, and may affect them more severely than in the usual situations. They form well-defined persistent purplish, red patches, with or without scaliness, and especially affect the knuckles and terminal phalanges. They are at first excited, and always aggravated by the winter's cold, and ameliorate, but do not disappear in the summer, except in some cases at an early stage.

Besnier's *Lupus pernio* * is another form which occurs in persons with a weak circulation, the eruption, being *en nappe*, but on close examination with the skin slightly scratched a fine nodular composition is revealed. Hutchinson says this is quite different from his cases, and thinks it is a *L. vulgaris* in a person with weak circulation. Tenneson has seen it associated with *lupus vulgaris*, and has noted dilatation of follicular orifices.

Complications.—Hutchinson has drawn attention to the occasional occurrences in cases of long-standing *lupus erythematosus* of the scalp of an *acneiform eruption* on the shoulders. These lesions sometimes spread at their borders, and thus

* Plates xviii. and xxxv., *St. Louis Atlas*, and the text. See also, discussion on a case shown by Tenneson, *Annales de Derm. et de Syph.*, vol. iii. (1892), p. 1142.

assume lupus characters ; in one case there were half-inch patches made up of groups of little red lichen-like papules, some with evidence of scar formation.

In plate lvi., fig. 3, of my Atlas a breast is depicted on which were persistent scaly lesions one-eighth inch in diameter, like a psoriasis punctata ; on the back of this patient beneath the scapulæ were somewhat similar lesions, but, instead of being persistent, they only came out in the spring and autumn, and after lasting six weeks disappeared.

Galloway had a case of a woman of forty-five with L. erythematosus of fifteen years' standing, in which the scalp lesions developed *bullæ*, which coalesced and extended to the margin of the affected area. The contents were limpid or turbid. After six weeks the bullæ ceased, and the surface healed without extension of the lupus. The face lesions were unaffected.

Epithelioma may develop in the cicatrices of L. erythematosus as it may in those of L. vulgaris, but far less frequently. A case is depicted in Kaposi's Hand-Atlas, plate xcix.,* on the upper lip, and Pringle † has recorded a case in which multiple epitheliomata developed on the scalp and recurred several times after free removal. Hollaender ‡ also has had a case.

Erysipelas and its effects have already been mentioned. Several cases of *folliclis* of the hands associated with it have been observed by Hallopeau, myself, and others. Hallopeau has also seen spontaneous follicular suppurations and intensely destructive acneic lesions near the patches.

Etiology.—It is very much more common in females than males in hospital practice, and in my private practice, it is over five to one (eighty-five to sixteen), and occurs chiefly between the ages of eighteen and forty-five years, while it is never seen in infants, is rare in children and in old age. The oldest, in my experience, was a woman of seventy-one, in whom it had commenced in the hand two years before, and the youngest was six years old ; but Kaposi records a case in a child of three years. Speaking broadly, its period of earliest onset coincides

* Kreibich gives the history of this case, and reproduces the illustration, *Archiv f. Derm. u. Syph.*, vol. li. (1900), p. 347.

† *Brit. Jour. Derm.*, vol. xii. (1900), p. 1, with coloured plates, and references to other cases.

‡ *Zeitschrift f. Derm.*, vol. vii. (1900), p. 962.

with the cessation of the liability to a primary attack of *L. vulgaris*. The etiology is, however, obscure for the most part. A history of phthisis in the family is frequent—Hutchinson says even more so than in *L. vulgaris*, but I should not go so far as that.* I have also thought that uterine derangements possessed an etiological importance. A feeble circulation is a favouring influence, and not infrequently the disease dates from some form of superficial inflammation, such as scarlatina or erysipelas. Prolonged exposure to great heat in the sun, or to great cold, especially cold winds, has appeared to be the exciting cause in some of my cases. The association of copious albuminuria with the diffuse form is too frequent to be fortuitous, but does not explain the pathology of the disease. Sometimes it follows small-pox, and it is said that persons with light skin and hair are more liable to it than dark-complexioned people. Its much greater frequency in the well-to-do as compared with *L. vulgaris* is noteworthy.

Pathology.—The disease is generally considered to have no pathological relation to *L. vulgaris*, but some authors † still regard it as a form of tuberculous disease, and there are certainly cases in which the two forms of disease seem to approach each other in clinical characters at all events. Anatomically, the lesions are

* Sequeira's statistics of seventy-one cases at the London Hospital corroborate these statements. Eighty-five per cent. females to fifteen males, fifty-six out of the seventy-one between sixteen years and forty, seven over forty, eight under fifteen, and the extremes were eleven and fifty-eight years. A family history of phthisis in thirty-four out of seventy-one, but in eleven disseminated cases eight had phthisis in the family. There was evidence of tuberculosis in the patient, in seven out of eleven of the disseminated cases, but in the discoid cases, three out of sixty cases had phthisis, seven had strumous glands, and one hip disease. In two of the acute disseminated cases, local irritation, viz., poultices to the abdomen, and the light treatment respectively, brought out the eruption. Five out of ten diffuse cases had albuminuria. *Brit. Jour. Derm.*, vol. xiv., 1902.

† C. Boeck opened a discussion in Edinburgh, in which he set forth the grounds for his belief in the tuberculous origin of lupus erythematosus. *Brit. Jour. Derm.*, vol. x. (1898), p. 371. He states that in thirty-six cases of discoid *L. erythematosus* twenty-four showed evident symptoms of scrofulo-tuberculosis, and of the other twelve, six had near relations who were tuberculous. He also says that, as in macular anæsthetic lepra, the patches of *L. erythematosus* are distributed in the course of nerves. Neither of these statements is borne out by English experience. See also the discussion on Tuberculides at Thirteenth Internat. Cong. at Paris, 1900, by Boeck, C. Fox, Campana, etc.

indistinguishable from an *inflammation of the cutis*, in which the infiltration elements undergo fatty degeneration and lead to the atrophy of the tissue in which they are deposited. No tubercle bacilli have ever been found,* and attempts at inoculation of animals have always failed.

It has been suggested that it might be due to the toxin of tubercle; but against this is the fact that in the early days of tuberculin for lupus vulgaris and phthisis, thousands must have had the tubercle toxins injected, and in no recorded case was lupus erythematosus produced; moreover, there was either no reaction or a very trifling one in all but a very few cases of L. erythematosus in which tuberculin was injected. The cases are uncommon in which phthisis, generally enlarged glands, or lupus vulgaris or other forms of tuberculosis have been associated with, or have developed in patients with, L. erythematosus.

Still, many distinguished observers besides Boeck believe it to be of tuberculous origin on clinical grounds. Among these may be mentioned Hutchinson, Besnier, Hallopeau, and most of the French school, but it is certainly not bacillary.

The balance of evidence, in my opinion, points to its being primarily a vaso-motor disturbance leading to an inflammation of the skin, perhaps of toxic, but not of tuberculo-toxic origin, especially predisposed to by a feeble blood-current; secondarily, there is microbic invasion of the disturbed epithelial layers; while in the acute general form, there is an additional infective element introduced into the system, and especially invading the lymphatics.

Anatomy.—Early observers considered, on clinical and pathological grounds, that the disease was primarily situated at the sebaceous or sometimes the sweat glands. Geber and Strogamn confirmed by Schütz, Unna,† etc., say that the disease commences in the papillary or deeper layers, and affects the gland structures secondarily.

According to Unna, there are primary epidermic changes, hyperkeratosis on the scalp, forehead, etc., or acanthosis (prickle cell growth), but not with downgrowth of the papillary processes, for it is compressed between the cellular growth in the cutis below and the increased cornification above. The horny plugs may or may not correspond with the follicular orifices, but when they do, the cells of the sebaceous glands undergo fatty degeneration, and finally atrophy (Schütz), and the horny pegs fill the vacancy. The

* Audry found them in a case of the disseminate form in two lesions, and none in a third, but all other observers have failed.

† *Histopathology*, p. 1071, under Ulerythema Centrifugum.

blood vessels of the cutis are surrounded by sheaths of plasma cells which soon atrophy. The cells are of nearly uniform size, and multi-nuclear and giant cells are absent, distinguishing it from lupus vulgaris and syphilitic lesions. According to Unna, at the height of development the cellular areas are composed of almost cubical cells at the periphery and round ones at the centre, all with a large round or oval deeply-staining nucleus surrounded by a fine regular shell of deeply-staining protoplasm. Inside the cell masses, are channels of enormously dilated lymph spaces, due to "insulated liquefaction of cellular territories." There is also marked œdema of the cell areas. The elastic tissue of the affected area is for the most part preserved.

Unna sums up the characteristic features as follows:—

"The formation of areas of inflammatory cellular new growth; the disappearance of the latter and of the collagenous tissue in favour of the dilating lymph system; the primary hyperkeratosis with or without epithelial growth and its results; the œdematous changes with hyalin swelling of the inflammatory body and prickle layer; and the formation of peculiar plug-carrying scales, with stoppage of the follicles and ultimate atrophy of the cutaneous structures. In the lupus pernio of the fingers, great hyperkeratosis is the main feature, with resulting pressure atrophy of the subjacent structures."

Schoonheid* has examined twelve cases histologically. He regards the disease as a chronic inflammatory process rather than a granuloma, and thinks the process begins in the rete, followed by a perivascular infiltration round the sub-epithelial vessels. The process extends upwards and downwards and round the appendages of the skin. It consists at first of leucocytes, but later there is proliferation of connective tissue cells, and the infiltration becomes more diffuse. There are some mast cells, but the proportion varies. Plasma cells are only found at the periphery of the foci, never in the central part.

Diagnosis.—It is very protean in its manifestations, and often imitates other diseases,† so closely sometimes as to require the greatest care in its diagnosis; and even the most experienced are sometimes deceived until further development reveals the true character of the eruption. The most characteristic features are—the age at which the disease begins; its slow course, its symmetry,

* *Archiv f. Derm. u. Syph.*, December, 1900, p. 163. Good abs. *Brit. Jour. Derm.*, vol. xiii. (1900), p. 159.

† See for further details a paper by the Author, "Lupus Erythematosus as an Imitator," *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. xii. (1894), p. 1.

and the position of the superficial patches on the cheeks and nose, ear tips and scalp ; the sharply defined border ; the closely adherent scales with processes dipping into the sebaceous orifices ; the absence of ulceration ; and the presence of more or less atrophic scarring, while there are no papules or nodules. In all these particulars, except the slow course, it differs from *L. vulgaris*, to which it has some clinical resemblances, especially in adults, in whom nodulation is often inconspicuous or absent. *L. vulgaris* erythematodes of Leloir is the only form difficult to distinguish. (See that disease.)

Less typical instances, where the scaliness is more abundant than usual, may be mistaken for *psoriasis*. This resemblance is so great, in some instances, that Mr. Hutchinson believes in a hybrid condition of "lupus-psoriasis." * S. Mackenzie showed such a case at one of the societies, and Dr. Neale of Leicester sent a young woman to me (whose sister was subject to ordinary psoriasis), who had indubitable *L. erythematosus* of the face, while on the forearms there had been an eruption like psoriasis, which was cured with chrysarobin ointment, but left scars. It must, however, be borne in mind that scarring is in rare instances left in true psoriasis. In a lady of thirty who had had psoriasis on her elbows which left scars, when I saw her she had typical lupus erythematosus of the ear lobes and left cheek. Her brother suffered from ordinary psoriasis.

Similarly, the appearance of *eczema* may be produced, which Hutchinson calls "eczema-lupus." The sharply defined border in lupus should excite suspicion, and on attempting to remove the crusts in an acute case, or the scales in a chronic one, they will be found firmly adherent, and sending processes down into the follicular openings. Here, too, if the disease is of some standing, more or less scarring will be present. In the chronic cases, the slow development, the greater infiltration, and the trifling variations in intensity, will give the right clue. Tilbury Fox also described an acne lupus, or "lupoid acne," but this has nothing to do with *L. erythematosus*. On the hand, especially on the fingers, it may be mistaken for *chilblains*. The distinguishing features are the persistence of the lupus patches through the summer, and the slight scaliness. Sometimes there is slight

* *Clin. Soc. Trans.*, vol. xv. (1882), p. 252, coloured plate. He considered that it was a lupus vulgaris. In this case also a sister had ordinary psoriasis.

streaky scarring on the backs of the fingers, sometimes a central depression and atrophic scarring, which, affecting the pulp of the finger, renders it conical and bloodless. Cases with thick, yellowish, horny flakes covering the patch offer little difficulty in diagnosis.

These compound terms are better avoided. Although, as before said, ordinary inflammations do sometimes seem to be the exciting cause of the lupus inflammation, and *L. erythematosus* frequently imitates simple inflammations, such as erythema exsudativum, chilblains, etc., besides those already mentioned. The telangiectic cases are like *acne rosacea* in some respects, but the symmetry on the malar eminences, the absence of papules or pustules, and the induration and persistence, are distinguishing features, and there is no scarring in *acne rosacea* as a rule, except from the larger acne pustules.

Indeed, the cicatrices will distinguish it from any other inflammatory infiltration, except some of those due to syphilis. In them, there is more deposit and less vascularity than in the lupus, and they run a more acute course. The scarring of hydroa vaccini-formis may sometimes suggest *L. erythematosus*, but the antecedent vesicular lesions and the intermittent summer course would be reliable guides.

Prognosis.—The more the disease resembles an ordinary dermatitis, *i.e.*, the highly erythematous cases, the more often they are amenable to treatment; and sometimes they involute spontaneously, the scarring being in proportion to the depth of the infiltration. In the chronic limited patches, although often obstinate, great improvement can always be obtained, and a cure sometimes effected, but very seldom without leaving a scar. In the acute, or subacute diffuse eruption, it is impossible to tell at once what will be the result, but it is so often fatal, that it is essentially a grave disease, and a guarded prognosis is all that is possible. White * of Boston is very pessimistic for all forms, but as Hutchinson has pointed out, there is a tendency to get well in the course of a long time, as it seldom lasts into old age.

Treatment.—The internal treatment is not very satisfactory. Arsenic is relied upon by some, and Hutchinson records a single case in which it was apparently the curative agent. A case which I saw with my colleague, Mr. Battle, also got well with arsenic, no

* *Jour. Cut. Gen. and Ur. Dis.*, vol. xvi., October, 1898.

local treatment having been employed ; but these cases are too exceptional to give much credit to the drug. McCall Anderson advocates the iodide of starch as curative in some, and beneficial in many cases. It is made by triturating twenty-four grains of iodine with a little water, and then gradually adding an ounce of starch, rubbing them well together until the mass becomes of a deep blue colour. It is then dried with a very gentle heat, and a heaped teaspoonful is given in water or gruel three times a day. The dose may be safely increased up to an ounce. The iodide should be freshly prepared and kept in a stoppered bottle. I have not had success with it. Iodide of potassium also has its advocates ; others, notably Bulkley, believe in phosphorus $\frac{1}{30}$ th to $\frac{1}{30}$ th of a grain three times a day. Payne gives large doses of quinine, twelve to thirty grains a day. I have had far better results with salicin internally than with any other drug. Beginning with a dose of fifteen grains three times a day it may be increased, except in the few cases in which the patient is intolerant of it, to twenty or even thirty grains a dose. It is most likely to be successful in the actively inflammatory cases, and, like every other drug, generally fails in the chronic cases with a few indolent crusted patches. However, as it can do no harm, and other drugs so rarely do any good, it is worth trying in nearly all cases. I have also given ichthyol, in five-minim doses in the form of pills or capsules, three times a day after meals, and thought that it had some effect in reducing the hyperæmia, but all direct remedies are only too likely to be disappointing. When they fail, I rely chiefly on those measures which will best promote the general invigoration of the patient, seeking for indications of anæmia, tuberculosis, gout, dyspepsia, uterine or ovarian irritation, etc., and endeavouring to correct such errors, and, for the rest, address myself to efficient local treatment.

Locally.—In all cases, the affected parts should be protected against any sudden or great alterations of temperature and against any local irritation, especially of sun and cold winds. The local applications come under, *soothing astringents* such as lead and zinc applications.

Compressing agents, such as collodion.

Discutients, such as soft soap, liquor potassæ and salicylic acid.

Bactericidal applications, such as perchloride of mercury, iodoform, etc.

Caustics, such as acid nitrate of mercury, Paquelin's cautery; *surgical means*, such as scarification, erosion, and electrolysis, and the light treatment.

Considerable judgment, to be gained only by experience, is necessary for the choice of the best method for any particular case of this obstinate disease; but it should always be borne in mind that, wherever there is active hyperæmia, this should be subdued by such means as would be employed in cases of dry dermatitis of any form before the more special measures are resorted to. Any application which irritates is only too likely to make the disease spread, and that, often at a most alarming rate.

If the inflammation is active, calamine or lead lotion—either the undiluted solution of the acetate, the glycerole, or the lactate of lead—may be painted on twice a day or more, and the emplastrum hydrargyri worn at night.

Collodion, not the flexile, has also given good results in my hands by compressing the vessels. Unna advocates ichthyol preparations, such as zinc ichthyol salve muslin at night, after fomenting with hot water. Unna's iodoform gutta-percha plaster muslin is also a good application for limited areas. Where there is less hyperæmia, a lotion of sulphide of zinc, as recommended by Duhring, suits some cases. It consists of sulphate of zinc, sulphuret of potassium, of each thirty grains, alcohol ℥iij, and rosewater ℥iv. The zinc and potassium should be dissolved separately, and then mixed. Hans Hebra recommends dabbing with pure alcohol many times a day; its evaporation produces by cold a contraction of the blood vessels which is very beneficial.

In cases with the horny adherent crusts so common in the so-called sebaceous form on the nose and cheeks, an excellent treatment is that recommended by Hebra. The spiritus saponatus kalinus is rubbed on firmly with a piece of lint or flannel. This removes the scales and fatty plugs, and if done thoroughly, there is some oozing of blood and serum, which dries into crusts, and these fall off in a few days, or sooner if soaked in oil. The process is then repeated, and sometimes, in a few weeks, a limited patch may be quite removed without even leaving a scar. It is especially useful in parts like the eyelids, where the skin is thin, and also before and after more severe applications; oil of cade ℥j or ℥ij to the ℥j is a useful addition sometimes. Soft soap is a similar remedy, and may be used continuously spread on lint,

and acts then as a mild caustic. Neither soft soap nor the spirit soap should be used where there is active congestion, or they will very likely aggravate the eruption. Painting with liquor potassæ acts in a similar way ; after a couple of minutes it may be washed off and boric acid ointment applied. Great care is necessary to get success without injury.

A milder and more generally applicable treatment with a similar idea is moderate friction of the part with benzoline, as recommended by Hutchinson, followed by a mild antiseptic ointment, such as iodoform gr. 5 to ʒj, or boric acid. I can speak in the highest terms of this treatment, except where there is great hyperæmia. It should be used at night, and calamine lotion applied in the daytime ; but if the benzoline produces any irritation, it should not be rubbed in more than two or three times a week.

Coming to stronger remedies,—For limited surfaces, Payne's treatment with salicylic acid, 3 to 6 per cent. in collodion, often gives excellent results. Unna uses 10 per cent. resorcin in collodion. It is safer to use not more than 2 per cent. at first, as resorcin appears to form some kind of compound with collodion, which sometimes acts as a strong caustic.

Richardson's sodium ethylate carefully painted on may be used for small patches, care being taken to keep the part dry afterwards till the eschar has separated. Chloracetic acid, applied with a glass rod, is a rapid superficial escharotic and not very painful, and is highly spoken of by Veiel, while for larger surfaces he prefers a 10 per cent. pyrogallic acid ointment, applied for three or four days or until a brownish superficial eschar forms, when it is covered with an iodoform bandage until the slough separates, and the wound is then dressed with iodoform. I prefer carbolic acid in crystals or combined with equal parts of camphor to any other caustic, as its action is superficial and not painful after a few seconds.

Schultz recommends painting with liq. Fowleri four parts, aq. distillatæ thirty parts, with chloroform ℥ij, to prevent the solution from getting mouldy. He paints it on every day for five days, which produces swelling, redness, and tenderness ; this is subdued with a soothing astringent, such as calamine, and then painting with the arsenical solution is resumed. A cure results in two to three months. Other methods with more or less good credentials are

—painting with oleum rusci or cadini, or glycerine of iodine, composed of ʒj of iodine, ʒj of iodide of potassium, and ʒij of glycerine. Arsenical paste is also effectual for obstinate cases, but is very painful, and burns rather deeply. Purdon cured a case by painting with a 3 per cent. solution of resorcin, and covering with an indiarubber mask. For my own part, I try calamine lotion, collodion, with or without salicylic acid, mercurial plaster, benzoline, and sometimes the spirit-soap treatment, and if good results are not obtained, I try linear scarification, as recommended by B. Squire, with his instrument, a bundle of knives, constructed to make parallel incisions one-sixteenth of an inch deep. These incisions are then crossed in two or three directions, and iodoform well rubbed in. The division of so many vessels effectually starves the disease, the bactericide adds to the good effect, and great improvement results. The operation requires repetition several times. Veiel's instrument, as improved by Pick (fig. 45), is on the same principle, and makes either punctures or cuts, and is well adapted for awkward corners, such as the angle of the nose and cheek and about the orbit, where Squire's instrument does not readily reach. The operation leaves scarcely any scar, and can be done either under local anæsthesia or nitrous oxide gas, where the area is not very great. This method is as great an advance in the treatment of this obstinate disease as erosion is for *L. vulgaris*, and almost supersedes caustics, which are painful and uncertain in the depth of their action. In deep-seated cases erosion may be preferable, as it shortens the treatment.

Lassar prefers Paquelin's thermo-cautery or the galvanocautery, scarifying lightly the affected area, so that only a thin eschar is produced, an antiseptic powder being dusted on after the operation. Only a small area should be done at one sitting.

Schiff removed nearly all the disease in a very extensive case by means of the Röntgen rays, which he employed for two months with an exposure of ten minutes a day. It is worth trying in a suitable case, but care must be exercised so as not to set up a suppurative dermatitis, using two to five ampères and a six-inch tube at a distance of about four to six inches. In one very obstinate case I obtained great improvement by continuing exposures until slight redness was produced, then soothing the inflammation, and when it had entirely subsided beginning again

with the exposures. A very obstinate ulceration of the nose healed soundly under this treatment.

The Finsen treatment can also be used with great advantage sometimes, but in a much smaller proportion of cases than in lupus vulgaris, and permanence of result is much less likely to be obtained; but this is the same for any treatment. Limited indolent cases—the “fixed cases,” as Brocq calls them—are the most likely to be improved by it. Still better than either the Röntgen or the Finsen rays, according to Oudin and Brocq, are the *high frequency currents*, and if any large proportion of what is said of it is true, it will prove a great advance in the treatment of the most intractable form of case. Jacquet states in his thesis that in thirty-one cases in Brocq’s clinic there were twenty-five cures. No other treatment hitherto brought forward can approach this, but it is unlikely that in anything like this number the cure was permanent. My own experience is at present too limited to speak of it first hand. *Radium-therapy* is mentioned in the treatment of lupus vulgaris.

Lupus Marginatus. This name has been given by Hutchinson to a disease which spreads up to a certain point and scars superficially, but in other respects differs from other forms of lupus. He records three cases.*

Two of the cases, a boy and girl, began in early childhood; the third, a woman, æt. forty, began when at. thirty-four. The patches were circular or gyrate. They were abruptly margined, had papular borders, and showed a thin pale cicatrix in their areas. In the boy, they were freely scattered over the lower part of the face, sparse on the forehead, and were not symmetrical. The circles and ovals extended in a streak down the ulnar border of the left forearm and side of the hand, and there were a few circles on the arm. The girl’s had a similar distribution, but there were none on the face. About twenty rings were scattered over the woman’s face. The papules of the border were not larger than a pin’s head, and the scarring of the area very superficial, and there was no erythema. They were steadily but slowly increasing in size, but gave no trouble. There was a strong phthisical family history. The nosological position of the condition is doubtful, and it is placed here provisionally.

* Hutchinson’s Smaller Atlas, plates xiii. and xiv., and *Archives*, vol. i. The cases are in *Clin. Jour.*, December 12th, 1894, p. 114.

Lupus Telangiectodes Disseminatus. Majocchi * describes a rare form of disease under this title. The extreme vascularity is its most distinguishing feature. There are numerous reddish or bluish-red ill-defined patches on which occasionally flat or slightly projecting papules develop. These tend to atrophy, while numerous small vessels, forming fine reticulations, ramify in all directions. The patient, a girl of twenty-three, had always suffered from chilblains. At sixteen, the chilblains of the feet reached up to the lower third of the left leg, and formed numerous isolated papules, which had invaded two-thirds of the lower circumference of the malleoli. During the next six winters, the disease extended over the whole leg and thigh and affected the other leg. When seen, the eruption was limited to the lower limbs, principally on the outer side of the extensor aspect; they began at the top of the thighs and extended symmetrically to the ankles. They were made up of patches from the size of the palm to a drop or small coin, and were lenticular in outline. There were eleven patches on the right and six on the left leg. The smaller were bright or pinkish-red, the larger bluish-red. The skin was more or less infiltrated, but there was scarcely any projection. Round the patches, especially on the hips, there were distinct nodules of soft consistence and variable size. Near the papules, or where they had formed, were atrophic cicatricial depressions like lentils or drops, round or oval, and often surrounded by a slight pigmented areola, especially situated at the periphery of the large plaques. With a lens, the patches showed fine dilated vessels, from which projected very numerous larger ramifications of a bright colour, radiating from the centre to the periphery, ending sometimes abruptly at the border of the patch, sometimes extending beyond it. According to De Amicis, the evolution, which is very slow, has an erythematous and telangiectasic period. At first bright red, later deep red spots appear. In the centre of these a network of myriads of fine capillaries appear, and slowly spread, sometimes even to the periphery. In some, spots develop irregularly, and extend in the form of tufts or rays. The lupus spots are of a bright red colour, and do not disappear on pressure, and in some papules

* *Berlin klin. Wochensch.*, May 14th, 1894. Abs. in *Annales*, vol. vi. (1894), p. 151. Possibly Hutchinson's Lichen Lupus, Smaller Atlas, plate cviii., is an example.

infiltration develops. The infiltrated vascular parts and the deep-seated nodes sometimes atrophy and leave superficial cicatrices.

SYPHILIS.

Synonyms.—Sibbens or Sivvens ; Radezyge ; Scherlievo ;
Mal de la Baie de St. Paul.

• These names were given to unrecognised syphilis which occurred in an endemic form in Scotland, Norway, the east Adriatic coast, and Canada respectively. They are now almost disused.

Definition.—A chronic, specific, contagious, hereditary, and protective exanthematous disease, which may produce lesions in any tissue of the body, and is in many respects analogous to leprosy but tends to get well.

Although this work is concerned mainly with the skin manifestations or syphiloderma, an outline of the early symptoms will not be out of place, as they must be taken into consideration in the diagnosis. The classification of the symptoms into primary, secondary, and tertiary periods of disease is convenient for description, and true in the main, although arbitrary and ill-defined in some respects, since the secondary and tertiary symptoms often merge into each other, and while, on the one hand, symptoms which usually occur late in the disease are occasionally among the early manifestations, on the other, some secondary symptoms recur at a late period.

The period of incubation, or the time which elapses between exposure to contagion and the development of the initial lesion, is usually three to four weeks, but the extremes are twenty-four hours (R. W. Taylor), and eighty-one days (Pusch).^{*} There are, however, few cases which occur outside the limits of two to six weeks.

^{*} *Jour. des Mal. Cut. et Syph.*, July, 1890; Pusch gives many cases, including a case of ninety-seven days, but it was not quite conclusive—the girl had an intervening variola. Also abstract by Brocq, *Amer. Jour. of Cut. and Gen. Ur. Dis.*, vol. viii. (1890), p. 492. Mackenzie Forbes of Montreal sent me an account of a case much longer than these, viz., from the beginning of October to March 7th. The patient contracted gonorrhœa at the same coitus, and it is suggested that the coincident urethritis delayed the syphilitic manifestation.—*Montreal Med. Jour.*, December, 1899.

The initial manifestation may be :—(1) A desquamating papule ; (2) a superficial erosion with indurated base ; (3) an indolent ulcer with a hard base extending beyond the sore, “the true Hunterian chancre.” In the case of a surgeon* who inoculated his finger in an operation by a direct blood inoculation, there was no primary sore, but the first symptoms began twenty-six days afterwards and the macular rash on the thirtieth day.

In at least 90 per cent. of all cases, the initial lesion is on or about the genitals, but there are few parts of the body on which it is not recorded to have occurred. In estimating the value of a negative history, it is important to remember, that the primary lesion and the early symptoms may be so slight, as to be unnoticed or soon forgotten by the patient. The next phenomenon to the sore, is the enlargement of the lymphatic glands in the neighbourhood and even elsewhere, which usually begins about ten days after induration round the sore, and may not entirely subside for a year or more. Between the time of the appearance of the initial lesion and the general eruption, there is a period of quiescence of from forty to fifty days as a rule (with extremes of twenty-five to one hundred and sixty days), or a month or six weeks after the enlargement of the lymphatic glands.

Symptoms.—Some of the following symptoms of general disturbance usually, but not always, precede the rash in a varying degree of severity :—transitory shivering and pyrexia, with the usual concomitants, malaise, languor, anorexia ; marked anæmia with its usual symptoms ; pains and tenderness of all the superficial bones, especially the clavicles, ulnæ, and tibiæ ; headache, often unilateral, and most intense and distracting ; neuralgia, especially about the orbit ; rheumatoid pains of the muscles, joints, and even ears, and occasionally epileptiform fits, temporary insanity, or various motor or sensory disturbances, in one case severe itching ;† all these symptoms being aggravated at night. The fever is present in a large proportion of cases, and may be dependent, or independent of the rash. The independent form

* Recorded by Jullien in Neumann's *Festschrift*. Abs. *Brit. Jour. Derm.*, vol. xiii. (1901), p. 390.

† Case recorded by L. Derville. The itching preceded the eruption, which was at first purpuric for a fortnight and persisted for another two or three weeks. There was albuminuria. Full abs. of case, *Brit. Jour. Derm.*, vol. ix. (1897), p. 175.

occurs in from six to nine months after infection, and may be continuous, intermittent or irregular. In the other kind, the temperature is not generally high, but may reach 104° F. or 105° F. in the evening, with a morning fall of 2° or 3° and even 6° (B. Yeo's case), and a pulse not exceeding 120 just before and during the development of the rash, the pulse falling as soon as the rash is all out.* The fever may precede the eruption by three or four weeks. In a few cases, the outbreak of each crop of eruption is preceded by fever.

On the other hand, it must be borne in mind, that in many cases, the general symptoms are quite insignificant or absent.

Concomitant Symptoms.—The most common symptoms during the early eruption period—*i.e.*, the first year of disease—are the primary sore or its scar; the enlarged inguinal, and often cervical and occipital glands; the throat, at the least, congested and angry-looking, and often ulcerated; there is often very little pain unless the ulcer is in a position where it is stretched in swallowing; itching of the fauces is sometimes experienced; mucous patches or superficial ulcers in the mouth and on the tongue; alopecia and lustreless appearance of the remaining hair; and perhaps double iritis. At a later period, while in an average case, which has been properly treated, the tendency to eruptions is less, there may be superficial glossitis and stomatitis, and the signs of the previous lesions, whether in the skin, eye, mouth, throat, etc., alopecia differing from the early kind, and an increased tendency to gummatous deposits in or inflammations of the bones, viscera, nervous system, or testicles, especially of their coverings, *e.g.*, periosteum, capsule of the liver, meninges, etc.

The following tables (pp. 779-81), transcribed from Hutchinson's *Illustrations of Clinical Surgery*, give a bird's eye view which will assist the student to get a comprehensive grasp of this complicated subject.

* *Lancet* Annotation, July 27th, 1901, *Résumé* of paper by Fitcher with several cases. One case was tertiary.

SCHEME OF THE COURSE, STAGES, AND SEQUELÆ OF ACQUIRED SYPHILIS.
ANTIDOTAL TREATMENT SUPPOSED TO BE ABSTAINED FROM.
BY JONATHAN HUTCHINSON, F.R.S.

<p><i>Incubation period.</i> Usual duration 3-5 weeks.</p>	<p>From date of contagion to first sign of induration of the sore. Condition of the site of inoculation variable according to the purity of the poison. If syphilitic-virus free from pus, probably little or no irritation until just before induration, when the spot would become for the first time red and itchy. If, as is usual, pus be mixed with virus, a soft sore may be witnessed almost from the first. The soft sore has a specific microbe according to some.</p>
<p>Development period, or <i>Stage of Primary Symptoms.</i> Lasts usually from 2 to 4 weeks.</p>	<p>From first appearance of induration to full development of secondary symptoms, rash, fever, and sore throat. It is usually the first part of the exanthem stage. Exanthem usually takes from two to four weeks to attain full development. The symptoms are one or more indurated sores and glands in groin. The latter usually not inflamed.</p>
<p>Stage of Secondary Symptoms, or Exanthem period. All the symptoms in this stage are usually general and symmetrical. Duration, from a fortnight to 8 months or more.</p>	<p>The induration of sore having lasted for two to four weeks and still persisting, the patient is liable to following symptoms, not all, or indeed any being necessarily present. Slight fever, rise of temperature, headache, more or less malaise; aching in joints and bones with little swelling. Roseolous eruption on trunk, followed in a few days or weeks by an eruption of papules, pimples, or blotches, which sometimes ulcerate and become rupial; ulcers on the tonsils usually with white borders and slight superficial sores on the pillars and velum of palate; condylomata in throat, on tongue, or at arms; iritis; retinitis with implication of the vitreous; loss of hair; slight general enlargement of lymphatic glands.</p>
<p>Post Exanthem period = Stage of Latency with reminders. The symptoms in this stage are only exceptionally symmetrical. It extends from the cessation of the secondary to the beginning of the tertiary.</p>	<p>The general health is restored, but in exceptional cases, the patient remains liable to sores in the throat, bald patches or sores on the tongue, palmar syphilide, etc. Sometimes the secondary skin eruption is never wholly got rid of; but if so it always becomes irregular. Sometimes there are deep or even phagedænic ulcerations, and sometimes a peculiar form of relapsing punctate retinitis is seen. Chronic sarcocele may occur. The patient may beget healthy children.</p>
<p><i>Tertiary stage.</i> <i>Period of remote sequelæ.</i> In this stage the symptoms are very rarely symmetrical. It begins from 3 to 5, to 10 or even 30 years after the secondary stage.</p>	<p>Gummatous swellings in cellular tissue, periosteum, or muscle, which may ulcerate and spread deeply. They are persistent, and show no tendency to spontaneous cure. Diseases of the nervous system (arterial disease, or gumma) are frequent, and affections of the viscera occur. The tendency to phagedænic inflammation, which may be seen at any stage of syphilis, is also frequent now.</p>

CHRONOLOGICAL STATEMENT OF EVENTS DURING THE FIRST YEAR OF
ACQUIRED SYPHILIS. NO MERCURY GIVEN.

1st month.	<i>Date of Contagion.</i> A little pustule or abrasion, lasting a few days, and then healing and perhaps forgotten. Nothing to be seen, or perhaps a soft sore, secreting pus.
2nd month.	An insignificant pimple, or perhaps nothing. An itching red papule which begins to indurate. Induration increasing. Induration well marked.
3rd month.	A roseolous rash; chancre very hard; bullet bubo in groin. Papular, scaly, or pustular eruption, sores on tonsils, and other secondary symptoms.
4th month.	Rash and other secondary phenomena continued and aggravated. Iritis or retinitis may occur.
5th month.	Secondary symptoms continued in some cases, disappearing in others. Chancre and bubo beginning to diminish. Iritis or retinitis may occur.
6th month.	Secondary symptoms continued. Repeated crops of eruption. Chancre probably gone; in many cases, patient quite well.
7th month.	Secondary symptoms continued, or beginning to fade.
8th month.	Secondary symptoms slowly diminishing, or perhaps recurring repeatedly.
9th month.	Patient probably well, but possibly still with rash out; liability in certain cases to palmar syphilide, sores in throat, and irregular eruptions in skin.
10th month.	Same as ninth, but probably symptoms diminished.
11th month.	Symptoms still diminishing, if any.
12th month.	In majority, patient well for several months; in a few, still with sore throat, sores, and irregular eruptions. In exceptional cases, secondary symptoms still severe.
	The period of latency or reminders now begins, after which, at a very uncertain date, tertiary symptoms may follow.

CHRONOLOGICAL STATEMENT OF THE COURSE OF SYPHILIS.

1st year.	Infection, indurate sore, bullet bubo, rash in two months. Roseolous eruption; grey-edged sore in tonsils; febrile disturbance; rheumatoid pains in joints; papular rash, possibly ulcerating iritis; sores in mouth; condylomata at arms, and on tongue; loss of hair.
2nd year.	Unless severe case, probably free from exanthem symptoms. Perhaps superficial sores on palate and tongue; palmar syphilide, etc.
3rd year.	Probably well. Rarely liable to choroiditis disseminata, and diseases of cerebral arteries leading to paralysis. Relapses of second symptoms, more especially phagedæna; sores on skin and mouth.
4th year.	Probably well. If a man has been two years free from symptoms may be allowed to marry. Risks as in third year.
5th year.	Probably well. Liability to syphilitic-orchitis, palmar syphilide acne (scarring), necrosis of bones in nose, etc., is now perhaps at its greatest.
6th year.	Probably well. Same liability as in fifth year.
7th year.	Probably without relapse. Increased risk of gummata in cellular tissue, periosteum, nerves, and meninges.
8th year.	Large majority of patients keep well from beginning of second year. His liabilities to the above maladies of the seventh year increase.
9th, 10th and 11th year.	Perhaps increasingly liable to the events of seventh year.
12th and onwards.	Still and always liable to late tertiary symptoms, however latent the disease may have remained.

Malignant Syphilis.—This term is often loosely applied to almost any severe case of syphilis, but I agree with Neisser and Haslund * that it should be restricted to secondary syphilis, where there are, as laid down by Neisser :—

Severe constitutional symptoms indicative of toxin action ; extensive and irregularly distributed lesions of the skin and mucous membranes, of a pustular and ulcerative character, especially attacking the head and face ; the ulceration being an early symptom, in some cases replacing the roseola, in others developing on deep-seated, rapidly growing, reddish-brown syphilomata, in either case soon reaching its limit and not spreading serpiginously ; the evolution and disintegration of the lesions being very rapid. He adds pleomorphism, but that is a feature of all marked secondary eruptions. The lesions of the mucous membranes may sometimes be mild while the skin lesions are severe or *vice versâ*, but more frequently destruction of the septum nasi and severe affections of the larynx are concomitants. Hæmorrhage and gangrene of the lesions, while they are frequent aggravating complications, do not of themselves indicate malignancy, as they may also occur in otherwise mild forms. It is noteworthy that milder forms of eruption, such as typical macular and papular lesions, sometimes follow the ulcerative lesions ; and finally, mercury must be given with the greatest caution, as it sometimes not only fails to heal the lesions, but may be actually injurious. They also do not respond to iodides like the ordinary tertiary lesions.

Tarnowsky includes all phagedænic forms with malignant syphilis, and also cases which are dangerous on account of localisation, like early cerebral syphilis, and some authors include severe tertiary cases, especially when developing early in the disease ; and Fournier considers the above described early ulcerations as evidence of precocious tertiarism, but there may also be nodes, caries, and early visceral lesions within a few weeks of infection. The cause of this malignant course is still in dispute, but the balance of evidence goes to show that it is the soil rather than the seed or the quantity of it which is at fault, though there may be no recognisable cachexia in the victim.

Cutaneous manifestations.—Syphilitic eruptions are very numerous, and are often named after the non-specific rashes, which they may resemble more or less closely, *e.g.*, syphilitic eczema,

* At International Derm. Cong., 1896 (p. 659 of *Trans.*), a discussion was opened by Haslund, Tarnowsky, and Neisser.

psoriasis, lichen, etc; but since their clinical differences are greater than their resemblances, and their pathology quite different, this nomenclature leads to confusion, and the nature of the elementary lesions, whether erythema, papule, pustule, or bulla, as proposed by Cazenave, is the foundation of the modern nomenclature.* The following classification is pathological :—

- I. Circumscribed hyperæmia, with slight infiltration :—
Macular. Erythematous.
- II. Marked infiltration of the papillary body :—
- Papular, variously modified. { 1. Dry papular.
2. Squamous, patchy, or circinate.
3. Lenticular or large papule.
4. Moist papular, or mucous tubercles.
- III. Especial implication of the hair follicle or its immediate neighbourhood :—
- Follicular, of progressive severity. { Miliary papular or follicular { large.
Miliary papulo-vesicular. small.
Miliary papulo-pustular.
Acneiform.
- IV. Infiltration with sub-epithelial suppuration and superficial ulceration :—
Varicelliform and Varioliform.
- Ecthymatous. { superficial.
deep.
- Bullous. { rupia.
pemphigoid.
- V. Gummatous infiltration with tendency to ulceration :—
Nodular syphilides.
- VI. Extravasation of blood constituents :—
Pigmentary syphilide (colouring matter only).
Purpuric (blood).

Deep phagedæna or ulceration may occur in the primary, secondary, and tertiary lesions.

General Character of Syphilides.—The secondary eruptions are bilateral,† and in the main symmetrical, tending to be distributed over a wide area of the body surface ; and while no part is exempt from them, they show some preference for particular regions, but never, like psoriasis, for example, affect distant points, leaving the rest free or nearly so. The localities chiefly favoured are the forehead, especially where it joins the scalp ("corona veneris"), the lower part of the face round the mouth, the margins of the

* This arrangement is slightly modified from one proposed by Sangster in *Lancet*, December 1st, 1883.

† T. Falcone records [abs. *Ann. de Derm., et de Syph.*, vol. ix. (1888), p. 425] a case where all the lesions, pustular, scaly, and roseolar, were entirely confined to the right side in a man of thirty-two. No cause was ascertained.

nostrils, the nape, the trunk, the flexor aspect of the limbs, especially the palms and soles, while the backs of the hands and feet usually escape. In their localisation, they often contrast with non-syphilitic eruptions, which they may resemble in appearance. Many of the lesions tend to be arranged in circles, and some others in irregular and occasionally herpetiform groups. The colour is bright red at first, and it is often not till the eruption has been out for a few days that the well-known dull red tint, which is usually termed coppery, but which in most instances is of the tint of a raw ham, is developed; later still, it becomes brownish or yellowish-red, and ultimately stains of a more or less pronounced fawn or brown colour are left. The lesions frequently change their appearance, *e.g.*, papules develop into vesicles or pustules on the one hand, or spread into squamous patches on the other; as a rule, the whole eruption does not come out at once, but gradually, and so it happens that all stages from the beginning to the end may be present together. Moreover, the variety of eruptions is as great as the number of elementary lesions to which the skin is liable; several of these are often associated or overlap one another, and, from these various circumstances, the important feature of "polymorphism" is produced, so that a polymorphous, non-pruritic eruption is almost characteristic of syphilis. Subjective symptoms, such as itching, burning, or pain, are often absent, and never conspicuous; but moderate itching is not uncommon when the eruption develops acutely, or is in warm situations like the perineum or scrotum. The course is, as a rule, slow, both in development and retrogression, and they have a great tendency to recur.

These peculiarities of symmetry, position, arrangement, colour, variability, polymorphism, pigmentation, and absence of subjective sensations constitute a group of symptoms which, when taken together, enable a diagnosis to be made without further difficulty in most cases, but there is no more common source of error, than that of depending upon one or two such indications, without taking the whole of the circumstances modifying disease into account. Jullien advocates the inspection of the eruptions through cobalt blue glasses, and says that by their means the syphilide may be recognised at an early or late stage when they could not be seen by ordinary vision.

Tertiary syphilides, as a rule, occupy only a limited area, are non-symmetrical, and while possessing some preference for such

parts, as the face and scalp, the palms and soles, round the knee, etc., the seat is often determined by some local irritation. On the trunk, they sometimes have a zosteriform distribution.

There is, as a rule, compared with secondary eruptions, greater infiltration of the affected tissues, and a readiness to break down and produce scars, either by atrophy or ulceration, the latter taking a circinate form. They are monomorphous, of squamous or of gummatous character, possess but little tendency to spontaneous recovery, and are apt to recur, but are always very amenable to treatment.

Pathology.—It has long been an inference that syphilis is a bacillary disease, and the discovery of lepra and tubercle bacilli has strengthened it.* Nevertheless, although micrococci or bacilli have been described by numerous observers in connection with syphilitic lesions, none of them are accepted generally as the pathogenic agent, and the matter, therefore, is still *sub judice*. De Lisle and Jullien, in 1901, are the latest claimants on the following grounds:—

1. They have found the microbe in cases of active syphilis only ;
2. The microbe agglutinates the serum of syphilitic subjects, and not of others ;
3. In animals it causes special lesions comparable to those found in man ;
4. It fixes the alexine of animals inoculated with syphilitic products ;
5. cultures have no effect on syphilitic subjects ;
6. As in syphilis of man, the microbes die with the infected animals. The bacillus is polymorphous, varying from five to eight μ in length to an elongated filament. It is mobile, and can be coloured by ordinary stains, but not by Gram's method. It is found in plasma and blister fluid, but not in the blood, owing to the presence of alexine, which is a bactericide, in the serum of coagulated blood.

Ward suggests that the phenomena of syphilis are produced by the toxins of a bacillus.

Anatomy.—The anatomy of syphilitic eruptions has been examined by Biesiadecki, Auspitz, Neumann,† Kaposi, Cornil, Unna, Ehrmann, myself, and others, with general agreement as to the results in all the main points.

With the exception of the erythematous eruption, in which hyperæmia

* "Bacteriology of Syphilis," *Jour. des Malad. Cut. et Syph.*, July, 1901. Good Abs. *Brit. Jour. Derm.*, vol. xiii. (1901), p. 441.

† Neumann's investigations contain a review of previous work on the subject. See *Viertelj. f. Derm. u. Syph.*, 1885, with numerous plates. Unna's *Histopathology* should also be consulted.

with comparatively slight cell infiltration are the main changes, all syphilides are characterized by a dense, pretty uniform, at first circumscribed, round cell infiltration enclosing the vessels. The process affects primarily, and mainly, the papillary body, and later, the deeper part of the corium, and secondary changes involving the epidermis, and even the subcutaneous tissue. The raw-ham colour is derived from the escape of blood-colouring matter of wandering or extravasated red corpuscles, though the bulk of the infiltration is due to plasma cells and spongioplasts (Krzyształowicz); mast cells are also abundant in all syphilitic lesions. An important point, on which Kaposi lays much stress, is, that the cells never organize into connective tissue, but undergo retrogression, and disappear either by absorption or suppuration. This retrogression always commences in the centre or oldest part (Virchow denies this) even, though, at the periphery, fresh infiltration may be simultaneously taking place; hence the circinate form so often assumed, especially in the later lesions.

A papule is at once the type and starting-point of all other lesions; a large papule or a nodule is only an extension of the process that produced a small one; a slight increase in intensity will produce more fluid exudation in the epidermis, which is raised up, and a vesicle is formed on the papule as a base, or, if the intensity is greater still, a pustule is developed. When the lesion is large, or the cell exudation very closely packed, as in gummatous infiltration of the skin, the vascularization of the mass is obstructed, and it disintegrates, breaks down, and an ulcer is produced; but in the early eruptions, the connective and elastic tissues are dissociated but not destroyed. Giant cells have been found in gummata, and also in nodular, follicular, and acneiform syphilides.

An important practical point, established by Neumann's observations, and amply confirmed by Hjelmman,* is that the diseased products, mainly exudation cells, persist in the tissues, though in diminished quantity, for from four to eight months at least after the disappearance of the clinical symptoms. The cells, which may be spindle-shaped and pigmented, affect chiefly the vessel walls, hair follicles, sebaceous glands, and sweat ducts, but the upper cutis layer may also be infiltrated, and perhaps granularly clouded. There may also be thickening of the vessel walls and follicles. It is not possible to say how long these products persist, but their observations lend a strong support to Hutchinson's doctrine "of residues of the early period of syphilis, being the starting-point of later lesions." With regard to pigmentation, when that affects the exudation cells only, the duration is comparatively short, but where the connective-tissue cells are pigmented, the duration is very long, and may be permanent.

Justus and Konried have shown that there is a great fall in hæmoglobin, commencing when general adenitis is established, and becoming lowest when secondary manifestations occur. This may be restored by mercury, but the blood also tends to recover spontaneously.

* This observer found that cell infiltration was still present from half to three years after the hard sore was macroscopically healed, that in roseola it only lasted a month, and in dry papular syphilides it lasted six months, and in moist papules twelve months. *Archiv f. Derm. u. Syph.*, vol. xlv. (1898), p. 57.

Fig. 1. Macular.



Fig. 2. Papulo-Squamous.



Fig. 6. Papulo-Pustular.



Fig. 5. Small Follicular.



Fig. 9. Rupia.



Fig. 10. Tubercular.





Fig. 3. Circinate.

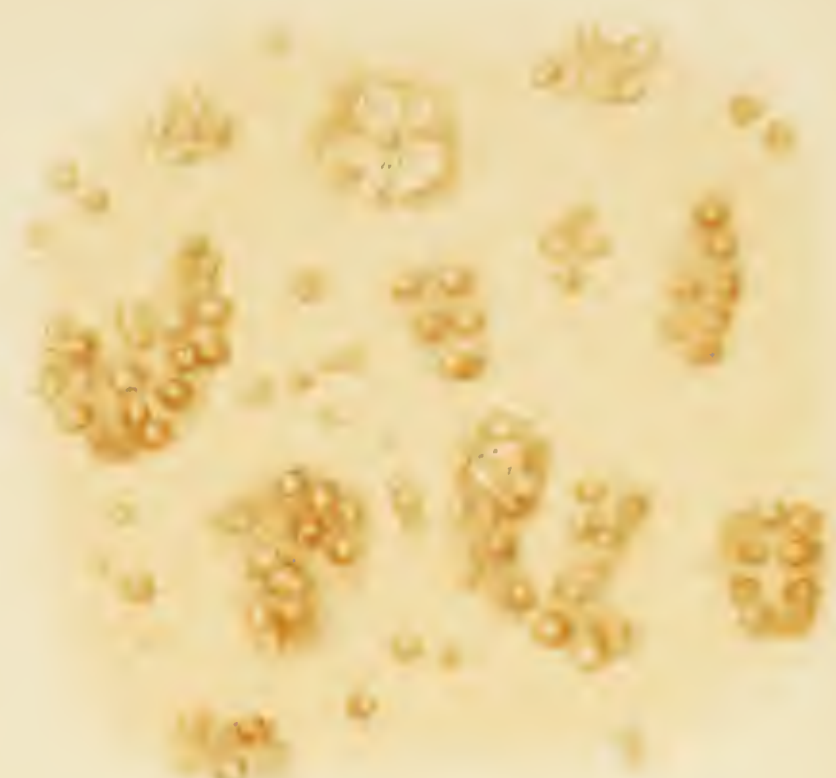


Fig. 4. Large Follicular.



Fig. 7. Large Papular or Lenticular.

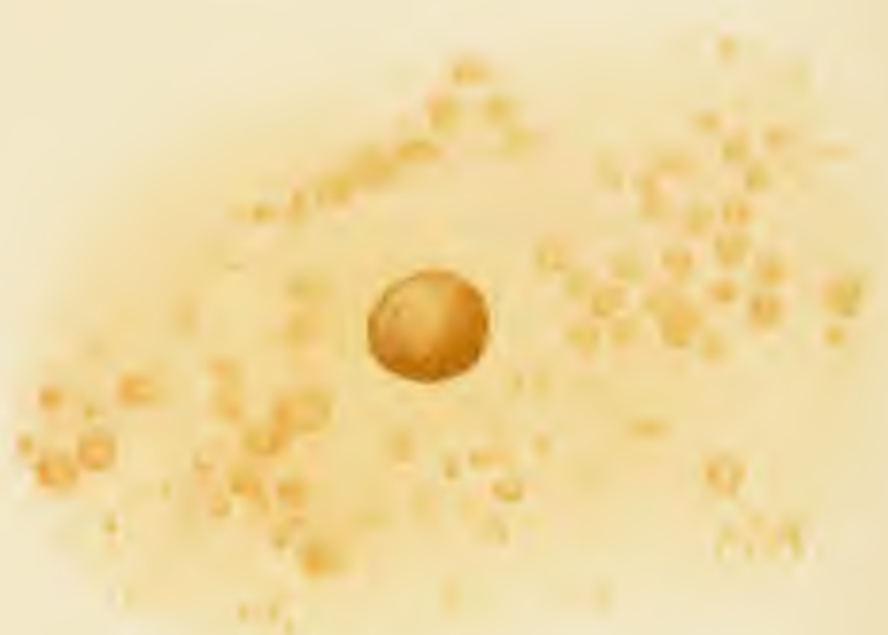


Fig. 8. Corymbose.



Fig. 11. Pigmentary.

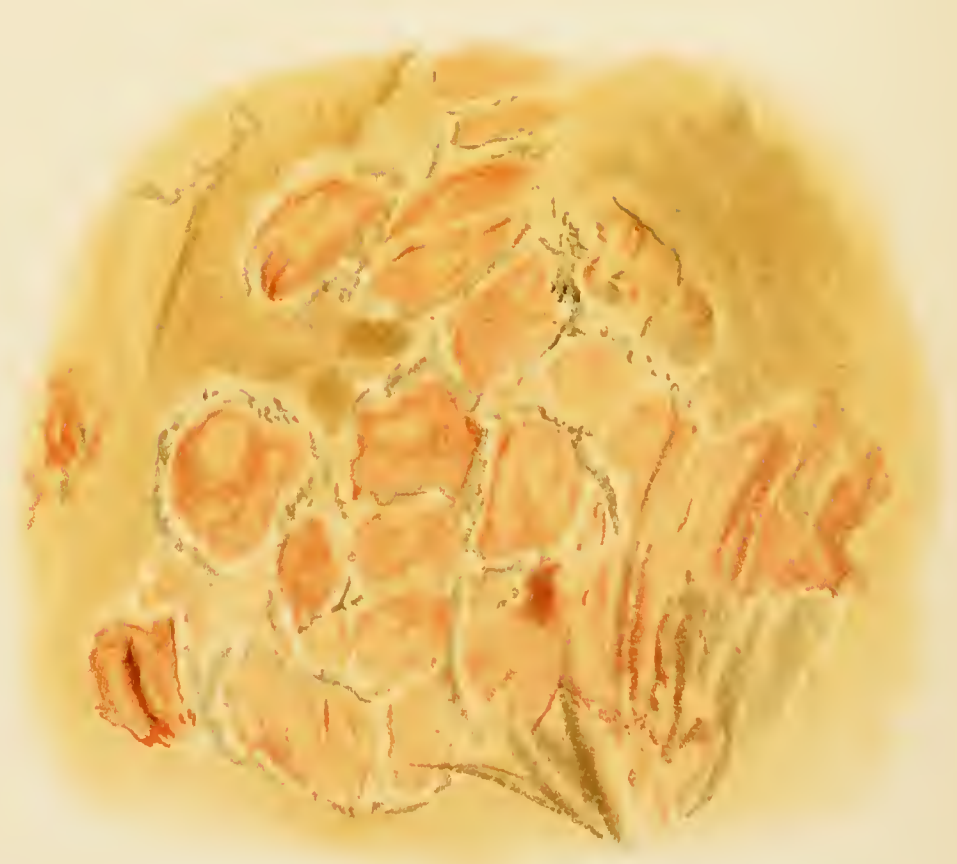


Fig. 12. Late Squamous of Palm.

The **Erythematous or Macular Syphilide, Syphilitic Roseola or Exanthem** (Plate I., fig. 1) is the earliest of the skin manifestations; it is very rarely absent, but, being often inconspicuous, or mingled with other eruptions, and unattended by subjective symptoms, may be overlooked by the patient. It usually comes out six or seven weeks from the first appearance of the initial lesion, taking, as a rule, a week or ten days for its full development, but may break out acutely in a single day, if congestion of the capillaries of the skin is produced by violent exertion, hot baths, or alcoholic excess, and there may be slight heat and itching. It may appear as a diffused mottling or marbling of the skin, very like that often seen on covered parts, when exposed to the air, in spots the size of the finger-tip, or as small as one-eighth of an inch in diameter, with ill-defined and irregular borders. In a few cases, the lesions are raised up like a pink wheal, but without itching, "the *wheal* type" as it has been called. They evolve gradually,* persist for weeks, and leave stains, and there is seldom any itching. The colour is a bright rose pink at first, completely removable by pressure, but very soon it gets duller, or even purplish in hue, and after pressure, there is still a yellowish tint; ultimately, the macula fades into a dirty yellowish or greyish-brown stain, which remains long after the exanthem itself has gone, but there is seldom desquamation. The favourite localities are the front of the trunk, especially the chest and epigastrium, the flank, the back, less commonly the upper segment of the limbs, or the wrists, somewhat more upon the flexor than the extensor aspect. Occasionally, it is very widely spread over the body surface, but even then the face often escapes, or it only affects the forehead and round the mouth. In rare instances, it begins on the face. Febrile, and some of the other symptoms mentioned, generally precede the eruption, and it is seldom indeed not to find corroborative symptoms, such as redness or ulceration of the fauces, gland enlargements, bone-pains, etc. In five cases out of six (Bassereau), other forms of

* Klotz read a paper with references on this "wheal type" in which the resemblance is only in form. *Amer. Derm. Assoc. Trans.*, 1900, p. 159. I have met with cases in which, in the first six months of syphilis, brownish-red wheals came out suddenly, lasted several hours to a day or two, did not itch, and left faint stains. Slight but distinct urticaria factitia was present, and there was constipation. This was therefore an urticaria in the course of syphilis, and not a syphilide.

eruption also, chiefly the papular, will be present, and prevent error in diagnosis which might arise, especially with the papular rashes of measles, r  theln, urticaria with pink wheals, various erythematous eruptions, idiopathic, symptomatic, or medicinal, if regard be had to the skin lesions alone. The position on the trunk, while the face, the backs of the hands, and wrists, which are favourite positions for most erythemata, are free; the absence of itching, and later on the stains, are further important aids. Tinea versicolor can only be mistaken by a careless observer, for the stains of the macular and other syphilides are *in*, and not on the skin.

The duration varies from one to four weeks, but slight relapses of limited duration, chiefly on the forehead and chest, sometimes occur in the first year, and a smaller or circinate form may occasionally appear in the second or third year of disease.

Tertiary circinate erythema (Neuro-syphilide of Unna).—Fournier* has drawn attention to a late syphilitic roseola, consisting of rounded, oval, or irregular, very superficial rings or patches of a rose colour at first, later getting a brownish-red tint, paling on pressure; the patches tend also to clear in the centre, while fine branny scales cover the peripheral portion. It is rare,† often unassociated with other tertiary symptoms, responds very slightly to internal treatment, and shows a great tendency to recur. I have seen it as a late secondary.   tienne met with it at an early period with other secondary eruptions. The rings are few in number as a rule, may be several inches in diameter, and seem to be analogues of those seen in leprosy.

Anatomy.—The anatomy of the ordinary macula has been investigated by Biesiadecki, Kaposi, Neumann, and myself. The result of my investigation is as follows:—The change is limited almost entirely to the upper layers of the corium, mainly the papillary, in a rather sharply defined area. The epidermis is raised up as a whole, but the cells of the horny layers and rete are normal as a rule, except where the effusion is greatest and stretches them. Here, there may be some elongation of the lowest cells, which may even be so disturbed that the defined line at the junction of the epidermis

* Fournier, *Annales de Derm. et de Syph.*, vol. vii. (1896), p. 1141, is one of his most recent papers on the subject.

† Nielsen denies this, having seen twenty-four cases, chiefly in a hospital for prostitutes, Copenhagen, but most people agree with Fournier. *Monatsh. f. Derm.*, vol. xxii. (1896), pp. 500 and 555. *Abs. Brit. Jour. Derm.*, vol. ix. (1897), p. 86. There is a model of this lesion, Mus. of Coll. of Surg., No. 204, Dermat. Catalogue.

and papillary layer is lost, the papillæ are more or less flattened out, the fibres of the corium are separated, presumably by the fluid effused, so that the individual fibres can be made out. The contrast between the upper part of the corium, with its separated fibres, and the normal corium below, is very distinct, but there is only moderate leucocytic infiltration, and this is almost exclusively round the vessels of the superficial plexus with their papillary branches; the capillaries and small arteries are moderately dilated, and both stuffed and surrounded with cells; in the walls of the capillaries, are prominent nuclei, and there are round and spindle cells in the adventitia of the larger vessels, as was first described by Biesiadecki. There is slight cell effusion round the hair and sebaceous follicles, and sweat ducts, where they lie in the upper part of the corium, but the sweat glands, and all the structures in the deep part of the corium, are normal. Kaposi saw caudate cells in the connective tissue of the papillæ,—indicative, he thinks, of proliferation of the connective-tissue cells; and Neumann affirms that the



Fig. 47.—Part of a syphilitic macula. $\times 125$.

a, connective-tissue bands of the corium separated by the cell effusion, *b, b*, which is chiefly in foci in the course of the vessels. In the upper part of the corium, the individual fibres are separated by the inflammatory effusion, and the papillæ are flattened out. *c*, normal epidermis.

change goes right down to the fat, but this was certainly not the case in the macule I examined. As all the structures of the skin in his case appear to have been more affected, especially the hair-sacs, muscles, sebaceous and sweat glands, than in the cases of Biesiadecki, Kaposi, and myself, possibly his patch was of longer duration. Neumann also observed granular pigment in the upper part of the corium, but only in the exudation cells.

Papular Syphilides are of two classes, according to whether they are formed round a hair follicle or independently of it. The non-follicular are formed by the papillary infiltration raising up the epidermis, and are flat or lenticular, and of two varieties, *large* and *small*. The follicular are situated round the mouth of a hair follicle, are conical, and are often termed miliary or lichenoid.

Here also there are two varieties, *large* and *small*. The small flat papular syphilide is a mixture of papules and scaly patches ; it is best known as the papulo-squamous syphilide, and the circinate scaly syphilide is a variety of it.

The large, flat papular syphilide has large, disseminate papules, not scaly as a rule, and is especially, from its shape, entitled to the term "lenticular," though that name, is by some authors, made to include both forms, and is used by B. Hill for the small flat papules in the scaly collar stage.

Syphiloderma Papulo-squamosum (Plate I., fig. 2). *Synonyms*.—Small, flat, papular, nummular, or squamous syphilide ; Syphilitic psoriasis.

This is seen at any period of the first, and occasionally in the second year of the disease, and is one of the commonest of the syphilides. According to the stage of the eruption, one or other of the above names is applicable. Commencing as a small, bright red, flat papule, it extends peripherally, and desquamates at the apex ; when this scaly cap is thrown off, a characteristic collar of loosened scales is formed from a quarter to three-quarters of an inch in diameter, seldom larger, and according to the age of the patch, of a bright or dull brownish-red, or yellowish-brown colour, or, on the legs, occasionally purplish-red. The scales are usually scanty and dirty-looking, but sometimes rather abundant and silvery, but never so much as in true psoriasis. This scaly eruption is the stage most frequently brought under notice, to which the terms nummular and squamous are suitably and psoriasis erroneously applied. The eruption usually comes out in crops, and while, as a whole, it may last for months if untreated, many of the patches undergo spontaneous involution, leaving fawn-coloured stains, and all stages of the eruption may thus be present together and form a very characteristic picture. The distribution is often very extensive. No part is exempt from liability to it ; it is often all over the trunk and limbs, predominating on the flexor aspects, on the face, especially on the forehead, at the margin of the hairy scalp (*corona veneris*), and on the lower part, round the mouth and nose. Occasionally it forms herpetiform groups, even unilaterally. The patches, as a rule, though often closely set, remain discrete, but may coalesce in parts like the lower part of the face, round the perineum or genitals, etc., but these areas will still present traces

of the constituent patches (*en nappe* aspect of French authors). Slight itching is not uncommon at first, but it is never a very prominent symptom.

Diagnosis.—It is distinguished from most cases of *psoriasis* by its predominance on the flexor aspect of the limbs, and by the uniform small size of the patches; but these criteria fail for guttate psoriasis, from which it may be distinguished by attention to the following points:—The syphilide is most common on the flexor aspect of the limbs; there are never widely distant foci of disease with healthy skin intervening; the patches are pretty uniform in size, and distinctly raised above the surface; the scales are usually scanty and dirty-looking and easily detached, and are



Fig. 48.—Papulo-squamous syphilide from the bend of elbow. $\times 125$.

a, enlarged papilla, free-cell exudation separating connective-tissue fibres; *b*, exudation-cell masses round vessels; *c*, similar cell masses round a hair follicle and in wedge-shaped foci in the deep part of the corium. The epidermis is thickened with downgrowth of the interpapillary part. The greater part of the scales have fallen off in the preparation.

never abundant enough to conceal the colour of the patch, which is of a duller red than that of psoriasis; brownish stains are left, and are often intermingled with more recent scaly patches; there are no bleeding or red points when the scales are removed; the palms and soles are often attacked; itching is slight or absent, and other forms of eruption, or at least, other symptoms of syphilis, are sure to be present. In psoriasis, the eruption is mainly on the extensor aspect, at widely distant points, *e.g.*, elbow, knee, and scalp; the scales are abundant, silvery and firmly

adherent, concealing the bright red patch, and when removed, bright red or bleeding points are visible; there is little or no staining left after the eruption, except when arsenic has been given, when the brownish staining of a syphilide may be imitated; and the general health is usually unaffected. The cachexia, the absence or slight degree of itching, and the early desquamation, with little, if any, tendency to vesiculation, distinguish the early papular stage from *papular eczema*.

Anatomy.—I found the following changes in a **squamous plaque** (fig. 48) a quarter of an inch in diameter, removed from the bend of the elbow of a man who had had a chancre three months previously.

The upper half of the horny layers had desquamated, the rete was thinned in some places, and thickened in others; the thinned part was where the process was most acute; the outline of the lowest part of the rete was irregular from loosening of the lowest cells, which were vertically elongated, but attenuated. Where the rete cells had proliferated and the whole become thickened, the sharp definition of the boundary line between the rete and papillæ was preserved, and the rete processes were broader, as well as elongated.

In the more acute part, the papillæ were enlarged laterally and vertically, the fibrous structure was obscured with amorphous granules, and the round cells present in only moderate numbers; the effusion of serum and leucocytes was greatest in the papillæ, getting gradually less towards the horizontal plexus, but not ceasing there entirely. Here and there, small collections of round cells were to be seen deep in the corium, *e.g.*, round a vessel communicating with the deep and superficial plexuses, between the acini of a sweat gland, or round the base of a hair follicle, though these structures were not, as a rule, affected in their deep part. Then, it was common enough to see cell infiltration between the angle of the rete, and a hair follicle or sweat duct, sometimes on one side only, pushing the hair over almost parallel to its arrector muscle, whilst when on both sides, it often extended downwards for a considerable distance.

Syphiloderma Circinatum (Plate II., fig. 3). *Synonyms.*—Circinate, orbicular, or annular syphilide, or *lepra syphilitica* of old authors. This is another form of squamous eruption of the secondary period, but is much less common, and usually later than the small patch form, of which it may be the relapsing representative in the second year, or even several years after infection; but its most common period is in the first five or six months to the end of the first year of disease, and it may be quite early. It may appear upon any part of the body or head, but the favourite positions are the nape and other parts of the neck, the forehead, and round the mouth and chin. In form, it is in circles from half an inch to an inch in diameter, or, by coalescence of two or more rings, in

gyrate figures with clear centres and sharply defined, distinctly raised borders, about an eighth of an inch wide, dull, or yellowish-red after the first few days, and moderately scaly as a rule, but sometimes crusted with silvery scales, and, except for its position, very like the ringed forms of psoriasis. The distinctions are the same as those already mentioned in small patch syphilides, especially the cachexia, together with the presence of the eruption in parts where psoriasis is seldom seen. The occipital glands are almost always notably enlarged. Both this and the nummular form relapse more frequently than the follicular syphilides; but, as a rule, the older the disease, the less extensive is the rash.

This form especially, in Unna's view, is the outcome of a combination of the seborrhœic process and syphilis—a combination which he considers is very common, and exercises an important influence in determining the character and position of so many syphilitic eruptions. That syphilis predisposes to seborrhœa capitis has long been recognised, but few go so far as Unna in acknowledging the converse influence in so many syphilides.

On the *palms* and *soles*, the appearance of the eruption is considerably modified by the anatomical peculiarities of these parts, and is often called psoriasis palmaris or plantaris. In the secondary period, it is usually symmetrical, generally occurs in the second year of the disease, but may be quite early in the first year; when very early, it is the more likely to form only part of the general eruption, or to be associated with other distinctive symptoms.

It begins as a coppery-red spot, seen through the translucent epidermis, but not always perceptible to the touch; the epidermis over it, first thickens, gets opaque, gives way and forms irregular cracks, and has a worm-eaten aspect, or is thrown off *en masse*, without splitting up into lamellæ, and leaves a tender area below the general surface enclosed by a jagged collar of epidermis; or fissures may form in the course of the natural deep lines of the palm, which are sure to follow their direction, and often go quite down to the corium. A somewhat similar squamous eruption may be seen in the tertiary period, often constituting the sole manifestation of the disease, after perhaps many years of freedom from the symptoms, and this in married women who have never shown any previous specific symptoms. Being often determined by local irritants, it is very likely to be unilateral, and

is most common in those who have to do manual labour. It almost invariably begins in the centre of the palm, consists chiefly of thickened epidermis, which readily splits into deep, painful fissures, chiefly following the direction of the natural folds. On the foot, it is often associated with papillary hypertrophy.

Diagnosis is seldom difficult. In the secondary period, the presence of other characteristic eruptions and symptoms, and its symmetry and amenability to specific treatment, would remove all doubt; but some of the circinate seborrhœic eczemaform eruptions at the hair borders front and back, and on the face, rather closely resemble the orbicular syphilide. There would always be abundant seborrhœa with or without accompanying inflammation, and of course the other symptoms of syphilis would be absent. These criteria hold good when the syphilide is present as a late secondary eruption, but when all other specific symptoms have long ceased to trouble the patient, and the remembrance even of his old enemy has faded away, neither the diagnosis nor treatment is easy. *Eczema palmare* is often very like it. Here, too, there are great thickening of the epidermis and deep, painful fissures; but while the syphilide nearly always begins in the centre of the palm, eczema rarely does so, being generally at the wrist or root of the thumb, and reaching the palm later. *Simple psoriasis* is rare on the palms or soles, and very rare without the typical eruption elsewhere; there is less thickening or fissuring, and no special tendency to begin in the centre of the palm.

Anatomy.—In the border of a circinate syphilide (fig. 49), on the tip of the elbow, which came about six months after the chancre, and in which there was free scaling very like psoriasis, there was great increase of the horny layers, which were almost completely thrown off, in many of the sections leaving only a few lamellæ still attached to the rete. There was also an increase in the thickness of the stratum granulosum.

The upper part of the scaly crust was homogeneous with closely compressed layers, but the deeper portion was of looser structure, and in the picro-carminic sections, could be seen to be permeated with minute rounded bodies both scattered and in masses, which stained with carmine and contrasted sharply with the yellow picric-acid-stained horny layers. In the rete, there was marked proliferation of its cells, and not only was it thickened, as a whole, but the interpapillary processes were greatly elongated, and sometimes interlaced, forming lacunæ filled with leucocytes.

The papillæ were correspondingly enlarged, both vertically and laterally, to from four to five times the size of the normal; they were filled with exudation cells, which extended to the horizontal vessels of the superficial plexus,

in diminishing numbers, but very few leucocytes extended into the rete. The capillaries were greatly dilated, but there was not much infiltration of their walls. The deep layers of the corium were only slightly involved, there being only here and there slight effusion round the vessels. When the sweat ducts passed through the infiltration, there was proliferation of their cells and blocking of the lumen, but the deeper parts were not always affected, though in some sweat coils there was cell infiltration between and proliferation within the coils. The hair follicles and their appendages escaped altogether, or with trifling cell infiltration round them. Clearly this is a different condition to what Neumann calls *papulæ syphiliticæ orbiculares*, in which he describes the hair follicles and their belongings as the centre and acme of the process.

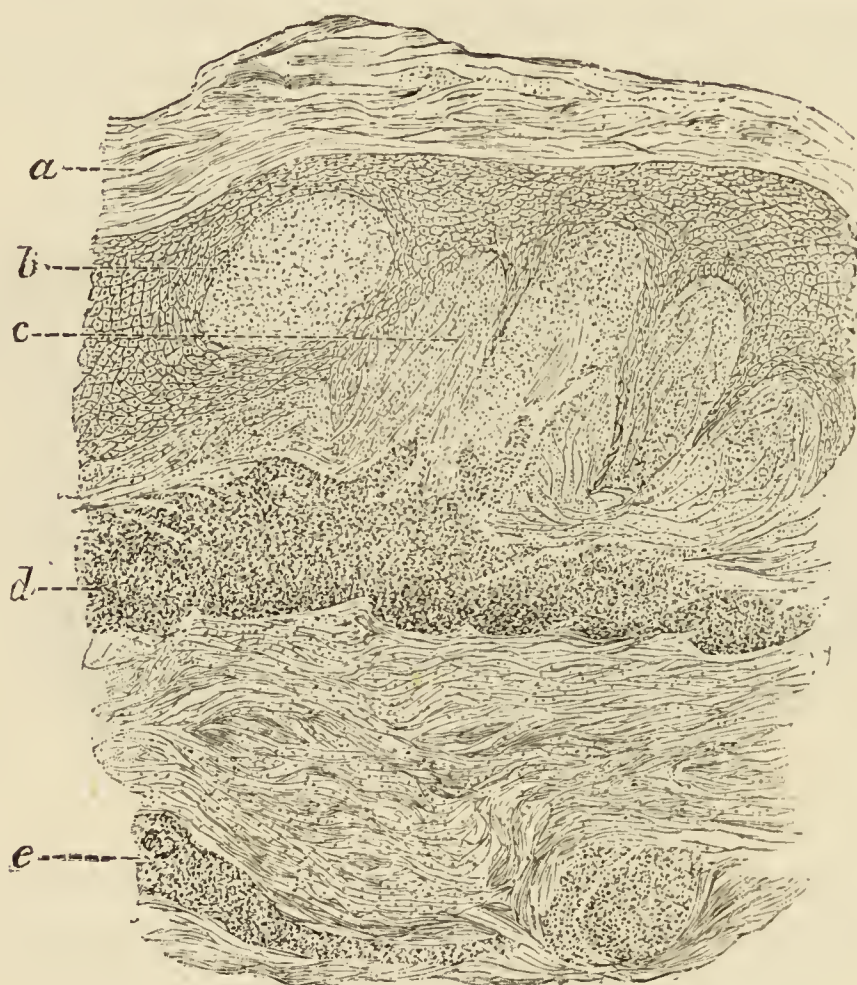


Fig. 49.—Circinate squamous syphilide. $\times 125$.

a, horny layers forming scales; *b*, oblique section of an enlarged papilla in the greatly thickened rete mucosum; *c*, enormously enlarged papilla with cell exudation separating its fibres; *d*, dense round cell exudation in masses round the vessels; *e*, similar cell exudation round a vessel of the deep plexus. There is also a scanty cell effusion all through the corium.

Large Papular Syphilide (Plate II., fig. 7). *Synonym*—Lenticular syphilide. This is one of the common early eruptions often following closely upon or mixed up with the erythematous lesion. It may, however, be one of the relapsing manifestations at a late period. The papules may be widely spread and numerous, but not closely packed; or they may be few and localised, but do not often group, except round the mouth or genitals. The most

common positions are on the forehead, lower part of the face, nape, and trunk, especially the back, the flexor aspect of the limbs, and about the genito-anal passages of both sexes. The lesions are from an eighth to half an inch in diameter, distinctly raised, sharply defined, flatly convex, varying much in colour, and, as a rule, of a deep red or raw-ham tint, but sometimes pale, and at other times a purplish-red, firm and smooth to the touch, though after a time they may desquamate. The larger ones are nodules rather than papules. These may be combined with the large follicular syphilide in a way to be presently described.

The *diagnosis* is easy, both from the fact that other syphilides and symptoms are likely to be present, and because the large

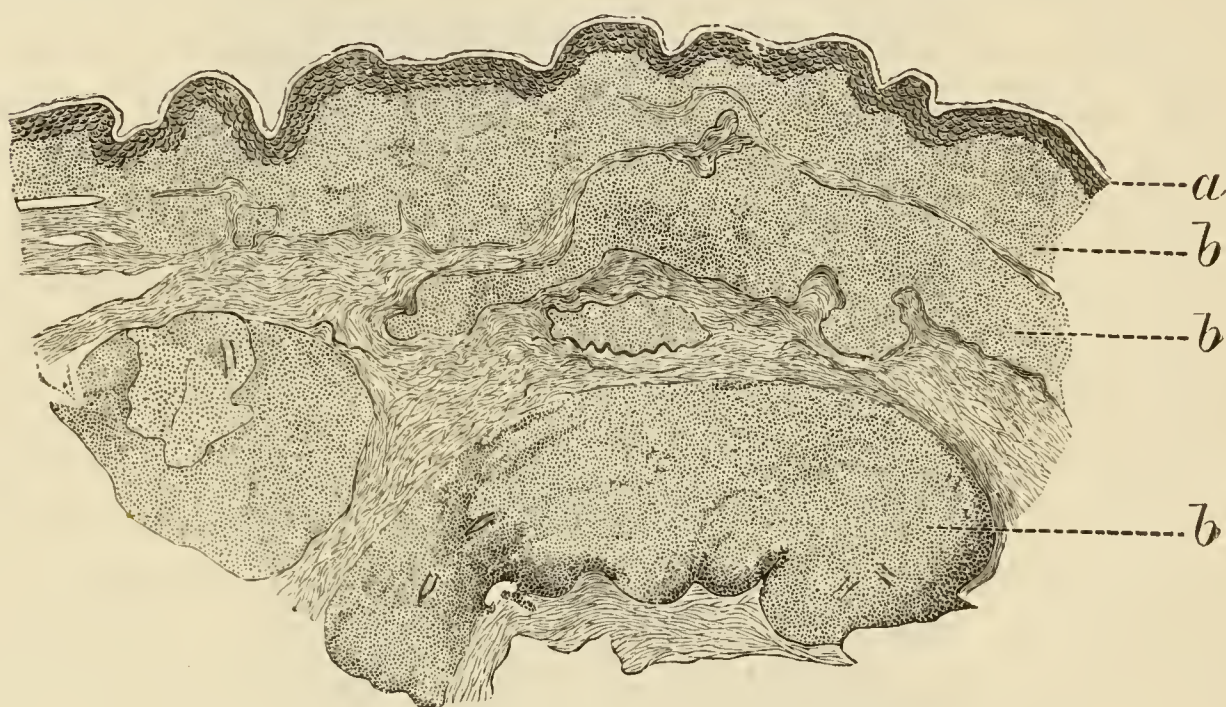


Fig. 50.—Lenticular syphilide. 2-in. obj., 2-in. ocul.

a, normal epidermis; *b*, dense cell masses round the blood vessels in the deep part of the corium, and uniformly diffused through the papillary layer.

papules are practically diagnostic, being simulated only by the nodules of leprosy, in which the history of residence in a leprous district and the general symptoms of that disease would be decisive, but when the two diseases are associated, the diagnosis may be no easy matter, unless, as in one instance that came under my notice, anæsthesia were present, which is not always the case in tuberculated leprosy. A careful analysis of the history would be necessary in such cases.

Anatomy.—In the large papule (Fig. 50), the cell infiltration affects the whole of the corium, commencing round the vessels of the superficial and deep plexuses, and their various ramifications. The cell effusion is usually greater in the papillary layer and the parts subjacent, so that here the

structure of the corium is completely replaced or obscured by it, and the vessels appear in places, as if they were mere channels in the cell effusion; in other parts, they are only indicated by the position and arrangement of the cell masses; this is very noticeable in the vessels of the hair follicles and sweat ducts. There is, however, but little cell infiltration of the hair follicle itself, and its outline is not altered as a rule, but the fibres of the arrector pili muscles are often separated by leucocytes. Both in the sweat ducts and coils, the lumen was often blocked by proliferation of the lining cells, and sometimes the structure was destroyed. There was always more or less cell infiltration between the coils, in places quite obscuring the gland structure; the rete was stretched and thinned in some places, slightly thickened in others, and occasionally there was downgrowth of the interpapillary processes. The outline of the palisade layer was generally well defined, and there was but little leucocytic infiltration, while there was occasionally slight loosening of the upper part of the horny layer, which was otherwise unaffected.

Follicular Syphilides. There is a large and small form of this variety of papular syphilide, in which the hair follicle is the seat of the lesion, constituting the so-called "syphilitic lichen or miliary syphilide." The **larger** is not a very common eruption (Plate II., fig. 4), but much more so than the small form. It generally occurs in the first six months of disease, and its most distinctive feature is its occurrence in irregular groups of three or four up to twenty or more. The most common positions are the extensor aspect of the limbs and the back, but it is not unusual to find it on the neck and breast, and it may be widely spread. The papules are about the size of a large pin's head or millet seed, bright red at first, but soon changing to brownish-red, and becoming crowned with a small scale, which is sometimes the remains of a minute vesicle. When they involute, they become flattened, and even depressed below the surface, leaving a pigmented pit. The eruption comes out in crops, so that all stages may be present simultaneously; occasionally the inflammation is intense enough to form vesicles or even pustules on the apex of some or all of the papules. Groups of brownish-red papules on the limbs and trunk, leaving pigmented and often atrophic pits, are very distinctive, and should always suggest further inquiry for the evidence of syphilis, which is invariably forthcoming at this stage.

Anatomy.—The examination of the papules in the **larger follicular syphilide** (fig. 51) showed that the whole process was in and around the hair follicle, but, unlike the non-specific lichen, the inflammation affected the hair papilla itself, whereas in all other lichens, the inflammation is limited

to the angles of the follicles and rete, and immediately round the external sheath, and any changes in the follicle, such as the knob-like outgrowths described by Neumann in lichen ruber, pityriasis, etc., were secondary and only occurred in cases of long standing. There was slight disturbance in the horny layers adjacent to the hair follicle, and the rete was thickened and raised up by the effusion beneath, so as to form a papule round the hair. Three or four papillæ adjacent to the follicle were broadened, and slightly deepened by rete downgrowth, and there was dense cell infiltration, not only into the papillæ, but into all the tissue round the follicle for its whole depth; this cell infiltration did not, however, extend far from the follicle in a horizontal direction, but its boundaries were not abruptly

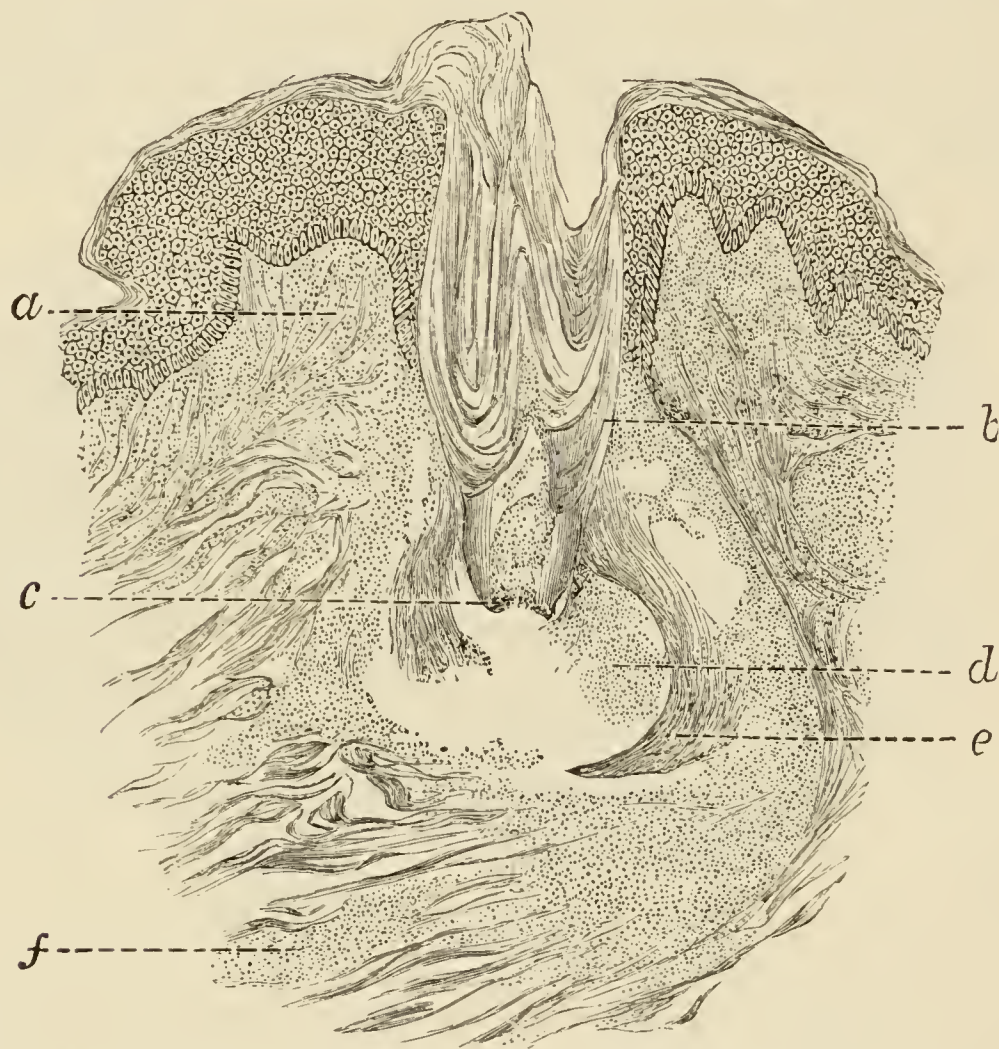


Fig. 51.—Larger follicular syphilide. $\times 125$.

a, cell effusion in the angle of the hair follicle; *b*, dilated hair sac nearly filled with horny scales; *c*, hair papilla destroyed by the inflammation; *d*, inflammatory effusion separating hair sac from the hair itself; *e*, portion of dilated hair sac; *f*, masses of cell effusion below the hair follicle.

defined. Vertically, it went down directly below the follicle, but either did not extend to the fat, or did so only by the narrow columnæ that Warren has described. Where the cell infiltration was greatest, the structure of the corium was quite obliterated, the vessels of the papillæ were dilated, and their walls studded with nuclei, the position of the larger vessels being only indicated by a well-defined mass of densely crowded cells which entirely concealed the vessel wall, and evidently both filled and surrounded the lumen. Coming to the follicle itself, the lower part of the external root-sheath below the hair shaft was dilated into a circular sac, which was ruptured at the lowest part, where the pressure was greatest; it had

evidently been filled with cells, though in the section drawn it may be seen that many have fallen out in its preparation (fig. 51). The internal root sheath was also ruptured by similar distension, and the papillæ were densely infiltrated with leucocytes, which had partially separated the shaft from the inner sheath; in some hair follicles, there was inflammation round them, but the hair papilla was untouched. The sebaceous glands were similarly involved in the process, their elements being either separated, or else only a fragment of the gland left, but the arrector pili muscle was not involved at this stage. In the sweat glands, which were near the affected hair follicle, there was cell infiltration between the coils and epithelial proliferation within them, but those further off were normal.

In a papule undergoing involution, which was removed from the flexor surface of the forearm of a woman, æt. thirty-two, in whom the eruption had commenced three months previously, preceded for about three weeks by the usual premonitory symptoms, the papule was not formed about the hair follicle, but by the lifting up of the epidermis by dense cell effusion, in the centre of which a sweat duct could sometimes be traced. The effusion obscured or destroyed the corium structure where the effusion was greatest, only fragments of it and its vessels being discernible. The mass of it was pretty sharply defined below, where it was bounded by the upper wall of the vessels of the superficial plexus. The rest of the corium was normal, except in the immediate neighbourhood of the vessels, whose position was marked by a defined oval or round mass of leucocytes, but the vessel walls were invisible. In the epidermis, the most superficial part of the horny layers had desquamated, and the rete cells, especially the lowest, were elongated and narrowed, giving a feathery appearance to the lower border, and some of the interpapillary processes were enlarged. Unstained sections showed that there was marked pigment deposit in the lowest cell layers. Similar conditions existed on each side of the papule, but where the process was not so advanced, there was dense infiltration in the papillary layer only, and below that, it was only round the vessels, forming sharply defined branched cell masses, with the bundles of the corium almost natural except from compression, filling up the intervals between them. The hair follicles were very small, most of them cut transversely, and there was cell infiltration round the follicles and between the fibres of the arrector pili, but no change in the follicle itself. Wherever there were sweat ducts, there was cell effusion round them, dense above, and blocking the lumen, but diminishing lower down and almost ceasing about midway down the corium; in some of the sweat coils, there was cell infiltration between the acini and cell proliferation within them, while others were quite healthy.

The above observations go to show that the papule may be formed round a hair follicle or sweat duct, according to the anatomy of the part attacked.

The "**small follicular syphilide**" (Plate I., fig. 5) is a rare manifestation of syphilis in my experience, and is more common in women; indeed, nearly all my cases were females. It may occur in the first or second year of disease, and, as far as the individual papules and their grouping are concerned, exactly resembles lichen scrofulosus, consisting of convex papules the size of a

large or small pin's head, pink at first, but soon becoming fawn colour, or even the same as the normal skin. They are generally thickly crowded together in groups, which may be irregular, roundish, or even in rings, often quite general in their distribution. This eruption is very persistent unless perseveringly treated, and the papules, on involution, leave minute fawn-coloured stains behind. Like its prototype, lichen scrofulosus, each papule may be the seat of a central horny spine just as in lichen spinulosus.

Diagnosis.—It has to be distinguished from *lichen scrofulosus* ;

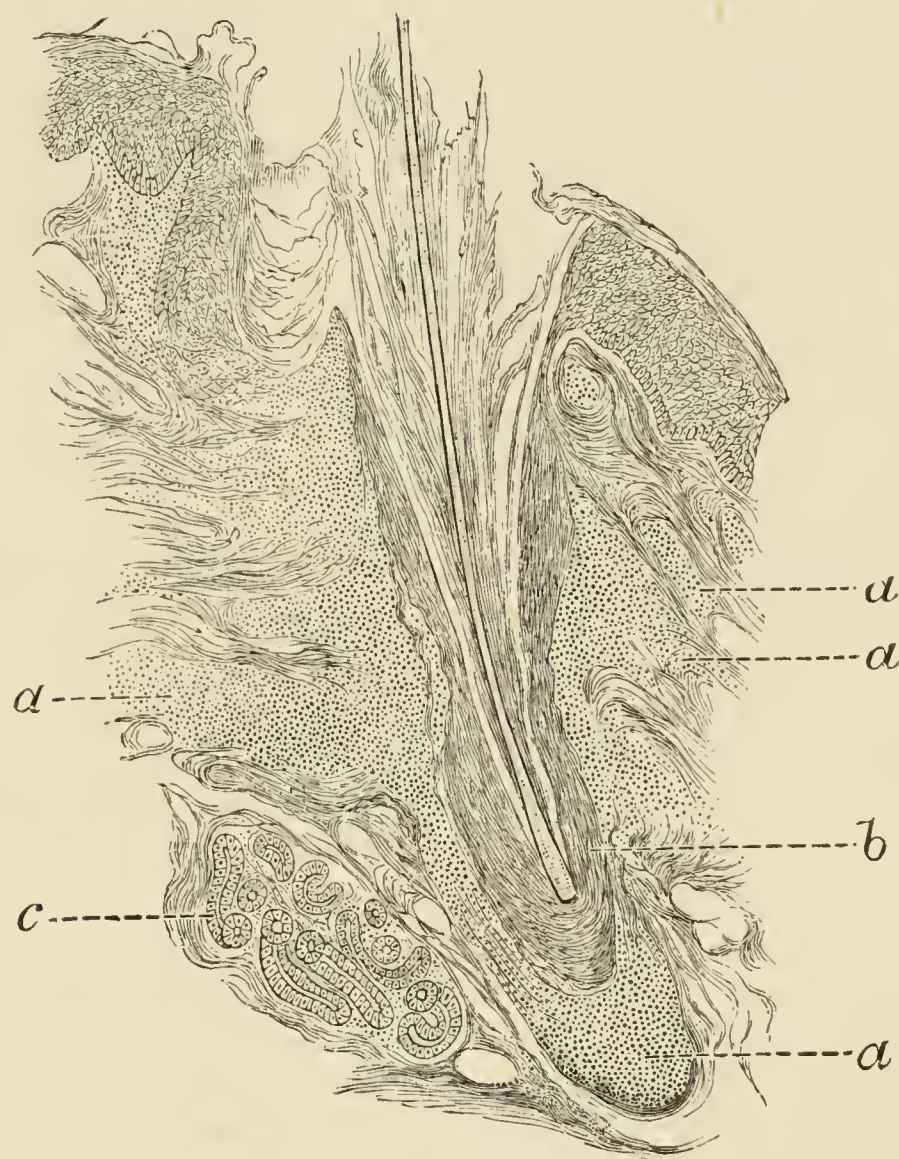


Fig. 52.—Small follicular syphilide. $\times 125$.

a, a, masses of round cell effusion completely enclosing the hair follicle ; *b*, hair follicle unaffected ; *c*, sweat coil with cell exudation between the acini.

the characters of the rash are identical in both, but while lichen scrofulosus is rare after puberty, and never later than thirty, the syphilide may occur at any age. Lichen scrofulosus is seldom seen on the limbs, and never on the head, while the syphilide is likely to be present in both these positions. The two conditions,

the presence of this rash in a person over twenty,* and its being on the limbs or head, should excite suspicion, and further inquiry will nearly always furnish evidence of past or present syphilitic lesions.

The miliary papulo-vesicular, the miliary papulo-pustular, and the acneiform syphilides may be regarded as merely developments of the miliary papular syphilide, the inflammatory effusion being sufficient to produce vesicles or pustules on the papular foundation.

In the **small follicular syphilide** (fig. 52), there was a dense cell infiltration completely surrounding and permeating the follicular wall, but not affecting the root sheaths or breaking up the structure of the follicle. The cell infiltration was greater at the bottom than at the angles of the follicle: it was very marked round the adjacent vessels, but existed in only a slight degree between the coils of a neighbouring sweat gland.

The horny cells round the hair shaft were increased in number, so that in the section, they imparted to the hair the appearance of a quill pen.

Corymbose Syphilide † (Plate II., fig. 8). This is a rare form in which a large lenticular papule is in the centre of an irregular group of the large follicular papules, the compound group being an inch or more in diameter. This eruption may extend all over the trunk, or be sparsely scattered about, but I have never seen it on the limbs or face. As a whole it forms a striking and unmistakable picture. The term is also loosely applied by some authors to other grouped syphilides. Whitfield suggests that this peculiar pattern of the eruption is because "there has been sufficiently strong development in the original papules to enable local metastasis to take place around them, such as is not unfrequently seen around malignant tumours."

The Vesicular and Pustular Syphilides. Although these tend to run on from one to the other, and are often present simultaneously, they can be more clearly described by considering them separately. They vary much in their size and grouping, and so present some

* I saw once a well-marked example in a girl of twelve, with accidentally acquired syphilis. The disease had been present about two months, the eruption three weeks. There was no difficulty in diagnosis, as the other symptoms of syphilis were well marked.

† The figure in plate ii. is drawn from a case of Dr. Whitfield's, which he published in *Brit. Jour. Derm.*, vol. xiii. (1901), p. 283, with histology. The cell infiltration was chiefly round the hair follicles, but involving the sweat glands also. There is a good model of a marked case in the Museum of the Roy. Coll. Surgeons, No. 185, Dermatological Series.

similarities to eczema, herpes, varicella or variola (early stage), and pemphigus, in the vesicular forms; and acne, variola (late stage), and impetigo or ecthyma, in the pustular forms. It must not, however, be inferred that they are really those diseases modified by syphilis, and qualifying terms founded on these resemblances are better avoided.

The foundation of nearly all these eruptions is a papule of the character already described, with the addition sometimes of a red areola. Upon this papule, the vesicle or small pustule (Plate I., fig. 6) develops; in some, the vesicle passes into a pustule, while in others, the pus is present from first to last. Each lesion is of short duration, a few days as a rule, and then ruptures or dries up into a scale or crust; the scale soon falls off, and leaves the flat, deep red papule, and this dies down, and a pigmented spot is left. The crust, which ensues on the pustule, takes longer to separate, ulceration often goes on beneath it, and ultimately a pigmented depression or scar is left. The eruption generally comes in crops, and so as a whole may last for weeks or months.

Vesicular Syphilides are much less common than pustular, are all early eruptions, and are all very rare after the first six months of the disease. They run a slower course, leave stains, and are almost invariably associated with other symptoms or eruptions of syphilis.

The **Small Vesicular Eczematous Syphilide** of Bassereau and Hardy, who first described it, is very rare. It comes out in crops, of small, flat, slightly raised vesicles, each seated on a papule surrounded by a brownish-red surface, if they are grouped, or with an areola round each, if scattered. They do not enlarge much, nor do they burst and weep like true eczema, but after four or five weeks dry up; and the red areola having faded, only the deep red, flat papule is left, and this slowly dies down into a dirty brown stain. In exceptional cases, the vesicles become pustules, which dry into thick scabs, and conceal superficial ulcers. Their slow progress, their trifling degree of itching and burning compared with eczema, the absence of discharge, and the subsequent pigment, apart even from other signs of syphilis, mark differences much greater than the resemblances to eczema.

The **Large Vesicular Syphilides** are grouped or herpetiform, and if general, varicelliform, or varioliform. In the grouped large

vesicular, or **herpetiform syphilide**, the groups may be irregular, circinate, or serpiginous by coalescence ; in all, the vesicles are on a deep red base, which subsequently gets brownish. After lasting about a week, the vesicles rupture or dry up, leaving fine scales over the brownish raised base, the latter being rather persistent, but ultimately leaving only a stain, or, if the vesicle gets converted into a pustule, a thick yellow crust forms over it, with perhaps superficial ulceration beneath. The eruption may come on the face, limbs, or trunk, and is usually only in a few patches ; it differs from *true herpes* by the groups being symmetrical, slow in development and course, by the vesicles being seated on a raw-ham-coloured base, perhaps also by the crusts and ulceration, by the subsequent stains, and by the presence of other symptoms of syphilis. Hutchinson also has described an eruption indistinguishable from herpes zoster, except that it is symmetrically distributed, that it is seldom limited to the chest, and that it is more persistent than the non-specific form. I have seen similar cases, one a young man who had a patch under each scapula late in the disease. Herpetiform grouping of tertiary lesions is occasionally seen.

In the **varicelliform syphilide**, the vesicles are either convex or umbilicated, and the contents soon become cloudy ; they are situated on a slightly raised plateau, of the usual dull red colour, and after a few days, the vesicles dry into thick adherent crusts of a greenish-black colour ; when they fall off, the brownish base is left, but it, too, soon gives place to a stained depression.

Its occurrence in an adult, its slow course, the vesicles being seated on papules, more closely grouped, with more crusting and even ulceration, slower development and greater persistence, to say nothing of the presence of other symptoms of syphilis, distinguish it from *varicella*.

The **varioliform syphilide** is only a slight modification of the varicelliform. The resemblance to *variola* may, however, be so great, that the greatest care is necessary in order to avoid error.

Liveing* relates a good case of this kind, which had been refused admission at several hospitals on the supposition of its being small-pox.

The absence of the characteristic premonitory symptoms of small-pox, the comparatively trifling rise of temperature in the

* Fifth edition, p. 346.

syphilide, its slow development and course, and perhaps other evidence of syphilis, are the chief points to attend to.

Anatomy.—The anatomy of the vesicular syphilides has been investigated by Cornil and others. As far as the base is concerned, the changes are of the same character as in the papular forms. The fluid is chiefly effused above the rete in the granular and corneous layers, and is contained partly in the cells themselves, partly in the cavities of the ruptured cells; the rete cells are also excavated, but to a less degree, unless the vesicle is large or becomes a pustule; then the whole rete, and even the papillary part of the corium, are also involved and filled with pus cells.

There are two forms of bullous syphilide: “rupia” and “pemphigoid.” They differ from the other vesicular and pustular syphilides in not being placed on a raised red base, and the areola is often pink, and not the usual raw-ham colour.

Rupia (Plate I., fig. 9) is one of the most characteristic syphilides; as the term is not now used for non-specific lesions, it requires no prefix. Its most common period is in the second and third year of the disease or later, but it may also be a quite early eruption, as in a case I observed, in which it followed closely on a phagedænic chancre. It is always associated with profound cachexia, often, if in the secondary period, with a severe primary lesion, especially the phagedænic chancre, and it is much less common than it used to be, since improved diagnosis and treatment have made the severe forms of syphilis comparatively rare. Its outbreak, especially if in the secondary period, is usually preceded or accompanied by a rise of temperature, and periostitis is common.

It begins with the formation of a bulla, a quarter to one inch in diameter, the contents of which are clear or blood-stained, but soon becomes purulent; then an areola forms, the covering of the bulla gives way and allows the contents to escape slowly, and this dries into a crust, under which ulceration takes place and extends peripherally. The pus drying, the crust gets thicker, and as the ulcer extends, broader also at the base; and thus the characteristic stratified, conical, limpet-shell crust is formed, with a pink areola round it. When the crust is removed, a sharply punched-out ulcer, shelving towards the centre, is revealed, or the ulcer may be visible beyond the crust, and the latter may fall off before it has time to acquire the limpet structure. These lesions are, as a rule, few in number, but are sometimes numerous, situated in any part of the body surface, but are usually most abundant on

the limbs, and may be either scattered or grouped, sometimes in rings. The ulcers continue to spread, sometimes serpiginously, unless the patient is under judicious treatment; they heal slowly, leaving white scars, sometimes with a ring of pigment round them. The eruption may last for months by the formation of new crops of bullæ, is apt to recur after apparent cure, and is only seen in the acquired disease.

No difficulty can arise in *diagnosis*, unless the lesions are few and occur in the late tertiary period, when they may be mistaken for scrofulous ulceration; but this is not common in adults, and evidence of past lesions, either syphilitic or scrofulous, as the case may be, is rarely wanting. The scars of syphilis are round, more superficial, non-adherent, thin, and pliable; those of scrofula, are generally irregular, adherent, and seamed. The position of the lesions is often quite different, and may assist, with the other signs, in making the distinction.

The **Pemphigoid Syphilide**,* or so-called syphilitic pemphigus, unlike rupia, is a rare eruption in acquired, occurring almost exclusively in congenital syphilis, and its existence is scarcely admitted by some authors. I have met with one case in a married woman, æt. nineteen, but unfortunately no particulars have been preserved. It is generally almost limited to the palms and soles, but it may be widely spread; the contents seldom remain clear long. Its position, association with syphilitic symptoms, and amenability to mercury, are its distinctive characters. It is one of the manifestations of a severe form of syphilis.

Pustular syphilides are not uncommon at all stages of the disease, but occurring in the early stage, are, if at all extensive, indicative of grave cachexia.

The small pustular or **acneiform** syphilide is one of the early and rarer forms; its favourite positions are the face and shoulders, but it may come anywhere except the palms and soles, as in the following well-marked case, in which the eruption was general. Annie S., æt. twenty, admitted into U.C.H. September, 1886. The appearance of the rash was exactly like the case represented

* Hutchinson's Smaller Atlas, plate xcvi., severe case; Zeissl's case was a typical instance; also Hardy's, *Lancet*, Paris correspondence, 1870, p. 65, man, æt. thirty-eight; Tilbury Fox's, *Lancet*, 1874, vol. ii., p. 43, man, æt. twenty-five; Gajasy, *Berl. klin. Woch.*, No. 24, 1880; abs. *Ann. de Derm. et de Syph.*, vol. for 1881, p. 771,—the eruption was general and recurrent.

in Bateman's *Delineations of Cutaneous Diseases*, 1828, plate xliv., fig. 1, under the name of *ecthyma cachecticum*. The pustules were flat, about one-eighth of an inch in diameter, on a raw-ham-red, raised base, which was broader than the pustule, and this again was surrounded by a narrow areola; these soon dried into a scab in the centre, forming a three-ringed lesion, with central dark scab. The whole of the contents of the pustule soon dried into a crust, which fell off, and left the raised, deep-red-tinted base, and this was succeeded by a dirty-brown stain. These pustules were partly scattered, partly in irregular groups. Most of the eruption came out rather quickly, and then spread more slowly, affecting the whole body surface—the face last—except the palms and soles, which were free, with the exception of two or three red, slightly raised spots on the left sole. The patient improved rapidly under mercury, and was almost well in a month. Some of the papules of the larger lichenoid syphilide are frequently capped with a small pustule, and probably the above eruption is only a further development of this condition.

Diagnosis.—Its resemblance to true *acne vulgaris* is not very great. The positions, the drying up of the pus into a scab, the characteristic red base, the absence of comedones, the duration of the eruption, the evident ill-health, and the other symptoms of syphilis, suffice to distinguish it. Horand* describes a tertiary eruption limited to the nose, which closely resembles acne. It is rare, occurring three times in a thousand cases of syphilis.

Small pustules, single or aggregated, are not infrequent in the scalp, whilst erythematous or other syphilides are present on the body. They are soon covered by yellowish-grey or brown crusts, forming patches round a single hair group, and are called by some "impetiginous syphilides" or "**syphilitic impetigo**." They are sometimes seen on the forehead and face, and, like the others, are formed on a papule, though this is not apparent in a patch, and ulceration occurs beneath the scab, and leaves a pigmented cicatrix.

The large pustular syphilides are seen only in the cachectic. The se-called "**ecthymatous syphilide**" may be superficial or deep, the superficial occurring mainly in the early stage, the deep in the third period. The lesion commences round a hair follicle, forming

* Horand, "Syphilide acnéique du nez," *Ann. de Derm. et de Syph.*, vol. vi. (1885), p. 385.

a pustule about a third or quarter of an inch in diameter, drying into a greenish scab, on a raised red base, surrounded by the usual coppery areola, develops slowly, lasts for a few weeks, but fresh crops often keep up the process for months. It is most common on the lower limbs, but is not confined to them. Their slow development, coppery areola and base, the cachexia that accompanies, and the pigment scars that follow, are the diagnostic features. Like rupia, when it appears early, it is often preceded by a severe form of primary lesion.*

Framboesiod Syphilide.—This is a rare form of ulcerating lesion, and may occur quite early, as in the following case. A man, æt. thirty-two, had a sore three months previously, followed by no other rash but the following, which was confined to the face. On the chin were two shilling-sized lesions, partially coalescing, projecting abruptly about a quarter of an inch above the surface with a rolled edge. The surface was granular and fungating, and partially covered with a dried purulent crust. There were similar lesions on other parts of the face, but no other syphilides in any other part of the body.

Nodular or Tubercular Syphilides are convex projections of the skin, too large to be called papules. They are most common in the tertiary period, but may also be an early manifestation accompanying or following closely upon the erythema. When occurring in the first year, they are from a quarter to half an inch in diameter, sharply defined, considerably raised, of the characteristic coppery colour, sometimes slightly scaly, occasionally breaking down and ulcerating, with thick scabs and much inflammation round, accompanied with much pain, and followed by white, depressed scars. They are solitary or few on the face, limbs, and trunk, but are not grouped, and some other eruption is often present. In the late secondary and tertiary form, although perhaps solitary at the commencement, others soon form round it. They are usually closely aggregated in one or two situations, very often on the forehead and other parts of the face, but in some cases cover a considerable part of the face bilaterally (Plate I., fig. 10) often more closely aggregated on the nose and neighbouring parts, the lesions varying in size from a hemp seed to a large pea or bean. The diffuse is less likely to ulcerate than the circumscribed variety; the latter may

* There is a good portrait of the eruption in Duhring's *Atlas*, Plate D.

coalesce into an infiltration, though the component nodules are generally discernible, at least on the edge, and is then very liable to break down and ulcerate, especially when near the mouth, or on the nose, either where it joins the cheek or on the ala. On the limbs and trunk, large tracts are sometimes involved, but never symmetrically. By peripheral evolution of the new nodules, and central involution, with or without ulceration, of the older ones, a cicatrix, more or less pigmented, results, either from atrophy or ulcerative destruction. These scars, with their nodular border, are very characteristic.

These infiltrations, which are generally gummata, are called by some writers "**syphilitic lupus.**" They ulcerate serpiginously, and when they occur about the face, especially the nose, may closely simulate lupus vulgaris; indeed, Leloir claims to have proved that scrofulo-tuberculosis and syphilis may be combined in the same lesion, but this has not yet been accepted. The ulcer of gummatous syphilis is covered with a thick greenish-brown crust, has a sharply punched-out margin and a circinate or reniform outline, which is very suggestive of its nature, and may produce considerable disfigurement if on the nose, though it is seldom deep in other parts. The scar is usually flexible, white, and shining.

Diagnosis.—From lupus vulgaris, the later nodular syphilide may be distinguished by the following considerations: The age of the patient—lupus vulgaris nearly always commences in childhood, a period in which this form of syphilis would be rare; by the nodules—those of syphilis are solitary at first, followed by smaller ones round each, and distinctly raised and copper-coloured—those of lupus are multiple from the first, embedded in the skin, brownish, translucent, and "apple-jelly-like"; by the duration—the syphilide would rarely be more than a year or two in duration, and syphilis will do more damage in a few months, than lupus in as many years; besides, in most cases, there would be some evidence of past syphilis. Nevertheless, occasionally when all such evidence is wanting, as may be the case in women, although there will be generally a presumption in favour of syphilis, the evidence may be short of being conclusive; then a week or two's treatment with iodides will produce such decided improvement in the syphilide as to remove all doubt.

The Justus blood test is not reliable as an absolute test, as it may occur in other conditions, but it is a good confirmatory test.

Subcutaneous Nodules or Gummata are, like the superficial lesions, common in the tertiary period, but are occasionally secondary. A firm, painless, well-defined, pea-sized nodule can be felt deeply embedded in the skin. This enlarges both laterally and vertically, and as it approaches the surface, the skin which had been normal, becomes of a purplish-red and adherent to the tumour, which softens in the centre, ruptures, and discharges a puriform fluid, and leaves the cavity to either extend or fill up, according to the patient's health or to the treatment; but, under favourable conditions, such a tumour may be absorbed before reaching the skin and disappear without leaving a trace. These gummata occur chiefly about the limbs, especially round the patella, and to a less extent round the elbow. So much is this the case, that scars round the patella, not due to injuries, are practically diagnostic of syphilis. Before they reach the surface, they may be distinguished from fatty tumours, by their more rapid development, firmer consistence, and absence of lobulation. When they have suppurated, they differ from malignant tumours in their abscess-like cavity, the absence of fungation, bleeding, secondary enlargement of neighbouring glands, and the smaller area of ulceration. Their structure is exactly like gummata in the liver or elsewhere.

Lesions of the Mucous Membranes. Syphilis affects the mucous membranes in much the same way as the skin, but the appearances are necessarily modified by the different physical conditions of the parts; consequently such lesions are called mucous tubercles, mucous patches, condylomata, etc. These lesions are not absolutely confined to the mucous membranes, as they also occur in those parts of the skin where the same conditions of warmth and moisture obtain, such as the axillæ, under the breasts, at the navel, between the toes, behind the ear, or under the chin in fat persons; but the more usual positions are, inside the lips near the angle of the mouth, the buccal mucous membranes, the fauces, the tongue, and at all parts where the mucous membranes join the skin, such as the vulva, the anus and perineum, the scrotum, the angle of the mouth, and the nostrils. The lesions are primarily of any size up to half an inch or so, roundish, but, when close together, may coalesce into large patches. The patches are slightly raised, flat, with

sloping margins, and, like the skin lesions, are bright red at first, and then brownish-red, but do not leave pigmentation behind them. The epidermis over these elevations soon peels off; a thick pus is exuded, which is often offensive and highly contagious, reproducing similar lesions wherever it touches. This is often seen on the buttocks and vulva, where they reach their highest development, and appear to be broken up into segments, constituting condylomata. The infiltration prevents the free mobility of parts like the mouth and anus, and painful fissures or rhagades are formed, which leave the characteristic radiating, white scar lines, so often seen round the angles of the mouth. They can scarcely be mistaken for anything else; true warts in the same situations have more epidermic covering, and are pedunculated. Moreover, mucous tubercles would be sure to be accompanied by other signs of syphilis, since they generally occur in the first six months, though solitary lesions may occasionally be seen in the tertiary period.

The fauces, pharynx, and soft palate may also be affected with an analogous condition. Diffuse redness and slight or marked swelling, in the case of the uvula, are visible, and there is some discomfort in swallowing and slight dryness of the throat, or occasionally severe pain. As a rule, all this disappears in a few days, under treatment.

Besides the erythema and mucous tubercles, shallow ulcers and excoriations are common on the buccal mucous membranes. The edges are sharply cut, but uneven, with some redness round them, and the surface is greyish-white from exudation, though the actual edge is white from sodden epithelium. They are seen on the pillars of the fauces, on the tonsils, the buccal mucous membrane, and outside the lips. On the tonsil, deep ulcers and even sloughing may occur occasionally.

Tertiary lesions affect chiefly the gums, hard and soft palate, and tongue. On the gums, serpiginous ulceration, beginning behind the incisors and slowly extending, may be seen four or five years after infection, and occasionally earlier. Similar eroding ulceration may affect the hard palate, exposing and leading to the necrosis of the bone. The appearances presented by the tongue lesions are very variable, from mere white patches (scars) to deep infiltrating and ulcerating lesions. Lewin says there are twenty varieties.

Syphilitic Ulceration. Although ulceration is the outcome of one or other of the previously described lesions, a separate description may be of practical utility. Following Kaposi, they are of four kinds: (1) from a nodule in the skin,—superficial, round, reniform, or serpiginous; (2) rupial,—round, reniform, or serpiginous, with thick crusts; (3) from a cutaneous gumma,—irregular, deep, and crater-like; (4) from subcutaneous gumma,—irregular and deep.

The typical ulcer is formed from a single nodule; it is painful and tender, circular, well-defined, finely indented at the edge, and undermined. The margin and floor are covered with a greyish-yellow layer from disintegration and infiltration, which is circular at first, but after a time, this is limited to one portion, amounting to about two-thirds of the circle, and the characteristic reniform shape is produced. The concave part cicatrizes, while fresh infiltration extends beyond the convex border of the ulcer; the confluence of several ulcers produces serpiginous outlines both in those from nodules and from rupia. The ulcers arising from gummata are relatively deeper and of smaller size, with irregular, crater-like walls, spreading only at the orifice of the cavity. All syphilitic ulcers become covered with thick, greenish-yellow crusts, which always require removal for diagnosis and treatment.

Phagedæna * is a severe complication, which may attack the primary, secondary, and tertiary lesions.

The Phagedænic chancre is often, as Bumstead and Taylor pointed out, the precursor of rupial, or phagedænic secondary lesions; but the latter may follow a sore of very simple characters, and while sometimes all the lesions become phagedænic, on the other hand, it may only affect some of the lesions.

It may be serpiginous or sloughing; in the first, while spreading at one point, healthy granulations may form at the original position. The sloughing form resembles hospital gangrene, and spreads rapidly and deeply, and is attended with severe pain and fever.

Although the soil is the chief etiological factor, and often there is cachexia from delay in specific treatment, alcoholism, and other excesses, or bad hygiene, pregnancy, senility, or other

* A good abs. of Fournier on Tertiary Phagedæna in *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. xix. (1901), p. 158.

cause of diminished resistance, there is doubtless a special organism introduced into the tissues in addition to the syphilitic virus.

Pigmentary Change in Syphilis may result from—(1) increase, (2) decrease, of the normal pigment.

(1) Increased pigmentation may arise—

(a) From the previous eruption ;

(b) Independently of any eruption, that is to say the so-called pigmentary syphilide.

(2) Loss of pigment occurs on the site of previous syphilitic lesions—

(a) In the form of white spots on the site of previous macular or papular syphilides (leucodermia syphilitica) ;

(b) From destruction of tissue, as in the scars of ulcerative and some pustular syphilides, but there is often marked and persistent pigmentation of, or round such scars, at all events at first.

Virchow's theory of pigmentation is the one generally accepted, viz., that it is due to blood-colouring matter, which permeates the tissues, and is deposited partly outside the cells as hæmatoidin crystals, and partly within the cells as pigment granules. Neumann* says that the pigment in syphilis is found both in the exudation and connective-tissue cells, and free in the necrotic tissue of the rete, and also in thin, thread-like tubes (processes of cells) which carry the pigment. When the pigment is only in the exudation cells and rete, it may disappear sooner or later, by absorption or desquamation, as occurs after macular, papular, and some pustular syphilides.

When it is enclosed in the connective-tissue cells, which may, in some cases, be completely filled except the nucleus, the pigmentation persists for a very long time and may be permanent. This is seen on the borders of scars following syphilitic ulceration and many pustular lesions, after cutaneous gummata, and some grouped papules ; the pigment is here granular. Neumann is convinced that the white spots following papules and maculæ are produced by the epidermis being cast off, and the newly-formed epidermis not taking up any pigment. Pigmented cells, however, remain from

* *Loc., cit.*, p. 223, *et seq.*, in which the whole subject is discussed.

eight to eighteen months in the papillary layer, partly between the connective-tissue cells, partly round the blood and lymph vessels. Riehl confirms this.

Frattali, from histological examination of the pigmentary syphilide, concludes that the pigmentary syphilide is consecutive to a pericapillary infiltration of the most superficial layers of the derma.

Hjelmann, in addition, finds a considerable increase of pigment in the derma. The leucoderma he ascribes to the obliteration and atrophy of the vessels.

Ehrmann says that the production or absence of pigment depends on the presence or absence of melanoblasts.

Pigmentary Syphilide.* (Plate II., fig. 11). *Synonym.*—Syphilitic leucoderma. This was first described by Hardy in 1853. The most common period for its development is from the sixth to the twelfth month of disease, but it may also come quite early, or in the second or third year. In a case of mine, a young married woman, it appeared about the third month, and was limited to the neck, and accompanied by the erythematous syphilide, which she averred had not preceded the pigmentation; and in a case of acquired disease, in a girl of nine years, it occurred in the sixth month. It is rather a rare condition, but is seen much more frequently in women than in men, in brunettes more than in fair women, and seldom after the age of thirty-five, but Chambard records a case in a man, æt. seventy-one. Gémy records a case in a boy from hereditary syphilis. Its seat is chiefly on the neck, especially at the sides and back; and it may occasionally be seen on the face, chiefly on the forehead, the chest, or flanks, but rarely on the limbs. The lesions are irregularly margined, round or oval spots, from an eighth to one inch in diameter, well or ill defined, with a yellowish-brown colour, but the surface is otherwise unaltered; they may be obvious, or require looking for, discrete or confluent, and the skin in the intervals between them appears abnormally white, though whether it really is so is a disputed point. It may be the only symptom of syphilis, but

* *Literature.*—Hardy, *Maladies de la peau* (Paris: 1858), p. 154. Taylor, *Amer. Jour. Cut. Ven. Dis.*, vol. iii, p. 97,—a good article with chromo-lithograph; and at p. 218 same volume is an abstract of Maireau's *Thèse de Paris*. Fournier, *Leçons sur la Syphilis*, also gives chromo-lithograph. Santin also has written an inaugural thesis upon it.

is more frequently only one of many. Most German authors * regard it as simply a leucodermia of syphilitic origin on the site of a previous roseola ; but Taylor of New York, while admitting that there is a syphilitic leucodermia, having watched the development of a large patch from the time when it was not larger than a pin's head, considers the pigmentary syphilide to be *sui generis*, and that the leucodermia is only simulated. According to Neisser and Riehl, it is really a displacement of pigment, which is less at one part and increased all round. It lasts from two months to several years, is uninfluenced by treatment, and is sometimes permanent. Ehrmann says that it is produced only in those parts of the skin where there has been a preceding syphilide, which has involved the corium and destroyed the pigment-carrying cells, or changed them into unpigmented ones. Darkening of the skin ensues if the deeper layers are involved. If this is true, the lesions are certainly not visible on the surface either before the loss or increase of the pigmentation.

Diagnosis.—It should not be mistaken for the pigmentation following the erythematous or other syphilides, while from tinea versicolor the distinction is easy ; from its position, and the fact that the colour is *in*, not on the skin, and that there is no fungus. From uterine chloasma, the conditions under which it occurred would be the best guide.

Purpura may be seen occasionally on the lower extremities, and its relations to acquired syphilis have been discussed by Stephen Mackenzie † and others. Derville records a case where dark red spots from the size of a pea to a haricot bean, appeared on the legs in the first fortnight of the disease ; albuminuria was present, and intolerable itching preceded and accompanied it. In a case of Neumann's, a man, æt. fifty-one, there were discoid plaques on the forearm with ulceration in the centre, similar crusted plaques on the sternum, and hæmorrhagic follicular papules on the lower limbs. There were also hæmorrhages in the mucous membranes. In congenital syphilis, it is more common and important, as Behrend has shown. The possibility of its being produced by iodide of potassium must be borne in mind.

* Poelchen, *Vitiligo acquisita Syphilitica*, Virchow's *Archiv*, Bd. cvii., p. 535, with plates, says nearly all women's necks are pigmented, and that the roseola spots remove a part of this when they fade.

† *Med. Times and Gazette*, vol. i. (1879), pp. 173, 279, 501.

Late Palmar Squamous Syphilide (Plate II., fig. 12). This is a dry scaly lesion, occurring as a reminder, perhaps, many years after infection. It is seen chiefly on those who do manual labour or in other ways have much grasping or friction of the palm. It may occur either in the form of denudation of the horny layers in small areas bounded by a scaly collar, as in the plate, or as thickening and fissuring very like a dry palmar eczema, from which it differs in having a rounded serpiginous border. It also commences usually in the centre of the palm, while eczema often begins outside the palm and affects that secondarily.

Alopecia. Loss of hair may occur in four ways. In the secondary period, there may be a general thinning of the hair, as a part of the general malnutrition, occurring at the third month and onwards. This may be of various grades, from being hardly noticeable up to very extensive but irregularly distributed baldness, as in R. W. Taylor's case, * which he ascribes to the commingled seborrhœic process. The hair may also come off in round patches, like alopecia areata; e.g., Ethel F., † æt. twenty-six, had symmetrical patches, an inch and a half in diameter in various parts of the scalp, a squamous eruption, and ulcerated sore throat and tongue. The hair was rapidly restored by specific treatment. In cases of more severity, the alopecia may spread to one or more additional regions, such as the eyebrows (especially in women, which, according to Fournier, is characteristic), the beard, the axillæ, or the pubes. In an exaggerated but rare variety of this form, there may be complete general alopecia, the patient being left without a single hair in any part of the body. These cases readily respond to mercurial treatment, as a rule, and in all the preceding forms, the hair grows again within five or six months. The symmetry of the patches, the amenability to treatment, and the presence of other symptoms of syphilis, would distinguish the patchy form from alopecia areata. An incomplete, patchy loss of hair may also occur on the site of eruptions, from the inflammation involving the hair follicle; this is transitory. In the tertiary period, the hair may also be lost, but in a less direct way; bald patches may be left by ulcerative or pustular lesions destroying the whole

* "The Seborrhœic Process and the Early Syphilitic Eruptions," *Jour. Cut. and Gen. Ur. Dis.*, vol. viii. (1890), p. 165.

† U.C.H., O. P., No. 69, 1880.

skin structure and producing scars ; this is of course irremediable. General thinning, leading to extensive and often permanent baldness, may be consequent upon seborrhœa, which is a not infrequent sequence of syphilis. The local treatment for seborrhœa, combined with the general treatment for syphilis, offers the best chance of restoration. In old syphilitics, the hair is also often left harsh, dry, and wiry.

Nail Affections.* These are of two classes : one, those due to lesions of the bed or matrix, or both, constituting onychia (chronic); the other due to lesions round the nail, perionychia (acute or chronic). In the first class, the changes are nutritive. The nail may be brittle, chipped at the free border, discoloured, pitted, and furrowed, or it may be gradually and painlessly separated from its attachment, either wholly or partially, beginning either at the free or attached border. Sometimes, while separation is going on at one end, re-attachment takes place at the other, and so the fall is avoided, but it is always left furrowed and irregular. Thickening of the nail may also occur, but it is less common than the deficiency in nutrition. The thickening occurs chiefly at the free border, where it is rough and chipped, or ridges may form, but the proximal part of the nail is often unchanged.

Perionychia may begin in three ways. 1. By the extension of a squamous lesion to the matrix ; the nail over the affected area scales off, and forms white pits, while the outlying border of skin may get thickened, brittle, and bleed easily from fissures.

2. Inflammation occurs ; the skin round becomes swollen and dusky red, but does not go on to suppuration, unless the swelling pressing on the edge of the nail causes ulceration, then the tissue fungates over the nail and gives exit to a foetid discharge, and the nail itself becomes necrosed and black or otherwise discoloured. Unless exposed to pressure, as in the toe-nail, it is not usually painful.

3. Gummatous infiltration of the matrix has also been recorded.

Children.—Acquired syphilis in children or infants presents much the same symptoms, and runs much the same course as in the adult, except that in very young children, the bones, at the junction of the epiphyses to the shaft, are very likely to be the

* For a more complete account of syphilitic nail affections see Fournier's *Syphilis chez la femme* (1873), p. 467.

seat of inflammation. Thus, one of my cases, a child, æt. six months, infected by being suckled by a syphilitic woman, not its mother, when three months old, had ophthalmia, dactylitis syphilitica of both hands, left facial paralysis, and subcutaneous gummata, some of which suppurated. In another, where the child was well up to nine months old, and then contracted syphilis from its mother, who had been infected by her sailor husband six weeks after her confinement, there was epiphysitis of the lower end of the left humerus, of the right olecranon, and of the heads of both tibiæ, when the child was a year and a half old; it had had a rash all over the body and a sore throat nine months before.

Congenital Syphilis—*i.e.*, the syphilis transmitted by the parents to the foetus in utero—presents some peculiarities both in the eruptions and other symptoms, but, at the same time, possesses many resemblances or analogies to the acquired form. Unlike phthisis, gout, etc., it is not a mere predisposition that is inherited, so that the manifestations may be in abeyance, until the surroundings or habits of the patient call them out, but the disease itself is transmitted.

Its effects may be shown, by the death and premature expulsion of the foetus; by live birth with the disease in full activity, in which case the child seldom survives long; or, what is more common, it may be born comparatively healthy and several weeks elapse before the disease declares itself. Which of these several effects shall be produced—and there are various grades in each class—depends chiefly upon the length of time that has elapsed between the infection of the parents and the birth of the child, and also upon whether they have undergone effectual treatment. Whether the disease can be transmitted by the father alone, the mother remaining unaffected, need not be discussed here, more than to say that in seeking for corroborative evidence from the parents, it is necessary to be aware, that the mother of an undoubtedly syphilitic infant may display no evidence of the disease herself, either in her history or at the time, though such women, quite late in life, may have some tertiary lesion. With regard to the father, he can transmit the disease to his offspring long after it has ceased to be contagious to others, and though he believes himself to be perfectly well.

The symptoms of congenital syphilis are of two classes: the

early, which occur in the first two years of life, and the late, which either commence or persist after that period.

The earliest symptoms nearly always show themselves in the first three months of life, and are never later than six months,* while in the majority of cases it is within from three to eight weeks. Thus, in two hundred and forty-nine cases collected by Roger,† in seven-eighths the disease appeared before the end of the third month, and in nearly half in the first month; in Kassowitz's hundred and twenty-four cases, none occurred later than three months.

The symptoms that may precede, accompany, or follow the eruptions are very numerous, since any tissue or organ of the body may be affected; but the most common in the early stage, are those due to inflammations of the mucous membranes of the nose, mouth, and larynx, the pericranium and epiphyseal junction of the long bones, the spleen, liver, and iris. The first symptoms are pallor, peevishness, and pyrexia, soon followed by the well-known and almost characteristic "snuffles," due to inflammatory swelling of the lining membrane of the nose. This obstructs nasal respiration, which may be stopped altogether by the accumulated secretion, and so prevent sucking, and will, if the child is not fed at once with a spoon, materially hasten the end. One or more of the eruptions and excoriations, to be presently described, soon follow or occasionally precede the coryza, most of them commencing and becoming worst upon the buttocks; mucous tubercles are seen about the mouth and anus, and rhagades round all the apertures; the child wastes; the skin gets loose and wrinkled; the complexion is of a sallow or *café au lait* tint; the face acquires a curious "old man" expression, as if the cares of this life were already too much for him; the skin is stained by the faded eruptions and disfigured by more recent ones; the hair is scanty, especially at the temples, which, with the eyebrows, are often bare; and if the larynx is affected, the cry is hoarse or even toneless. The spleen is often enlarged, in a quarter of the cases, Gee says, and if the enlargement is great, it is often associated with profound anæmia and bone-changes; this combination is more common in the second year, when perhaps all the skin lesions have disappeared; the liver is less

* Trousseau puts it at seven months, and Cullerier at a year.

† Quoted by Lancereaux, vol. ii., p. 137, *New Syd. Soc.*

frequently and conspicuously enlarged. The changes in the skull are due to thickening of the bone on the one hand, or thinning on the other. The thickenings may be circumscribed or diffuse, the latter being an advanced stage of the former. The circumscribed thickenings or bossy enlargements are easily felt and often visible. They are really nodes, which are formed chiefly upon the frontal and parietal bones surrounding the anterior fontanelle, but not reaching up to its edge (natiform thickening of Parrot). The parietal and frontal eminences are the last parts attacked, and, except in advanced cases, are left as islands of healthy, smooth bone surrounded by the vascular, roughened, diseased bone, which seldom reaches quite up to the sutures. These bossy enlargements are easily palpable and often visible. In the diffuse form, which affects the frontal bone chiefly, there may be osteitis as well as periostitis. Cranio-tabes, of which there are all grades, up to the total wasting of the bone substance in some spots, can be felt in the posterior part of the parietal bones, and behind the mastoid process. It is not confined to congenital syphilis, but is very common in that disease. The other form of thinning occurs on the inner surface of the skull, and is only of post-mortem interest. The thinnings and thickenings may be not infrequently seen on the same skull. Nodes may also be seen on the long bones occasionally in infancy, but are more frequent at a later age. The chief affection of the long bone is inflammation at the junction of the epiphysis and diaphysis, which is attended with heat, swelling, tenderness, and pain on movement, so as to produce a pseudo-paralysis. It may be seen at a very early age (one of my cases was only three months), affecting the ulnar, radius, and tibia, but not symmetrically. The so-called "dactylitis syphilitica" is probably of the same nature as this epiphysitis. The cranial changes may also begin very early. In an infant who died at ten days old, after having had a bullous eruption with excoriations, the whole of the skull surface, except the parietal and frontal eminences, was red and roughened.

In the last stage of congenital syphilis, the skin lesions are seldom of importance, and generally absent; lesions of the eye, ear, bones, teeth, and viscera, and occasionally of the nervous system, are those chiefly met with, and since they occur independently of skin eruptions, need not be gone into here. Gummatous

infiltration of the skin with ulceration, very similar to that seen in the acquired disease, is to be occasionally observed.

The various symptoms enumerated, of which only the most common have been mentioned, are, of course, not seen all together in one patient ; they occur in various combinations, and at various periods, but may all be present in the first year of life, and most of them within the first three months.

The following skin eruptions are met with :—

An **erythematous rash** or **roseola**, resembling that of acquired syphilis, is rare in infants. In Bassereau's oft-quoted case, a papular syphilitic erythema appeared on the face and then on the body on the third day of life, soon followed by coryza.

Cullerier records its appearance at birth. In a case at Shadwell, æt. two months, the rash had been present one month ; the whole body surface was covered with maculæ half an inch in diameter, brownish-pink in colour, with some scaliness in parts. According to Diday, the abdomen, lower part of the chest, and inner surface of the limbs are the usual positions for the bright, soon becoming coppery-red, irregularly outlined, finger-nail-sized patches, generally associated with ulcers of the mouth and anus.

Another form of erythema, however, is the most common of all the congenital syphilides, consisting of erythematous patches of various sizes, which usually commence on the buttocks and round the anus. They may be well or ill defined at the edge, bright coppery or yellowish-red, tending to coalesce into large sheets of eruption, but generally patchy on the borders. This erythema may extend uniformly on the back and inner side of the legs, quite down to the feet, including the soles, which are bright red and peeling. On the front and outer side, it is still generally patchy ; upwards, it often extends to the loins and abdomen, and in a few cases, all over the body, in patches which coalesce ; the whole surface is then red and desquamating on the dry parts, while on the buttocks, or where it is exposed to moisture, the scales are soaked off and the surface is left raw or brightly glistening. These generalised cases are very likely to die.

Diagnosis.—This eruption is at first liable to be mistaken for intertrigo, but this is never in well-defined patches, does not extend below the parts covered by the napkin, and yields readily to simple measures of protection and cleanliness. In specific erythema, snuffles and other syphilitic symptoms are generally

present also. It must be borne in mind, however, that intertrigo is very easily excited in syphilitic children. Mothers often ascribe both these conditions to the "thrush having gone through it," and will admit this, while they will deny that a child has ever had any eruption on its buttocks or elsewhere.

This erythema differs from the exanthem of acquired disease, in the great tendency to coalesce, in being raised above the surface and often well defined, and in the greater tendency to desquamation, even at an early stage.

The next most frequent lesion is **mucous tubercles**. In the early stage, they are generally associated with other lesions of the skin, but are sometimes alone with snuffles, and are often the sole relapsing lesion from the first to the third or fourth year. They are especially common, but not confined to the anus and angles of the mouth, occurring wherever there is warmth and moisture, such as the groins, axillæ, and between the toes; they resemble those seen in the adult, but are more frequent and numerous. Superficial excoriations about the anus and buttocks, generally on the site of an erythematous, squamous, or other lesion, are very common, as are also rhagades at the angles of the various apertures, such as the anus, mouth, nostrils, eye, etc., due to the inelastic and brittle condition of the epidermis of those parts, the result of erythematous and other lesions.

A **papulo-squamous** eruption, corresponding to that of acquired syphilis, is the next most common, consisting of round superficial patches, from one-eighth to half an inch in diameter, very slightly raised above the surface, delicately scaly, with a pink or reddish-brown colour at first, but after a few days of a pale fawn tint. It may be limited to one or more regions, such as the limbs, forehead, or round the mouth, or occupy the whole body surface, usually in discrete patches; it commences upon the buttocks, where superficial ulceration is apt to occur, from the irritation of the urine and fæces. A variety of this is a crescentic squamous eruption with a raised border, which, in one of my cases, began on the buttocks a week after birth, then spread over the thighs, and then all over the body, forming map-like outlines on the skin, most marked over the lower part of the body and legs. A definite circinate scaly eruption, resembling that seen in the acquired form, is also to be observed.

The **small papular** forms are acuminate, convex, or flat. The first two are bright or brownish-red, of extensive or limited distribution, occurring chiefly on the limbs, sometimes in groups of three to six, sometimes scattered irregularly ; they may be crowned with a scaly cap or with a small bead of pus, seldom with a clear vesicle. When the pustular element is the predominating one, it is generally an early manifestation ; in one of my cases, it began on the third day of life, and was associated with small squamous patches of the buttocks and thighs, while the pustular element was most marked on the face. The flat papules are not so common as the others ; they are slightly raised, shining, and angular, or roundish, grouped in irregular patches, but with not much tendency to coalesce, and are very like infantile lichen planus, but their outline is often rounder, the colour is duller in hue, and other evidence of syphilis can generally be found ; *e.g.*, a boy, *æt.* two months, had snuffles badly, erythema on the buttocks, when three weeks old, still present all over the genitals, and below the knees, while on the shoulders and neck, were flat angular papules like lichen planus ; a few isolated flat patches about a third of an inch square were also present.

Vesicular eruptions are rare in congenital syphilis, and are scarcely ever the first form of eruption. They vary much in character and size, *e.g.*, a boy, *æt.* four months, had brown discoloured desquamating patches over the legs, arms, and face, slightly on the trunk, ulcerating on the buttocks ; a week later, vesicles appeared singly and in groups, a millet seed in size, with little or no redness at their base ; the following week, they had developed into bullæ from a pea to a hazel nut in size ; the general condition was, however, improving, and in another fortnight he was well.

Pustular eruptions are much more common than the vesicular ; besides the small pustules that sometimes crown papules, already described, there are ecthymatous-looking sores, with a greenish crust concealing the sharp-edged spreading ulcer, or a simple excoriation. They are never very numerous, are associated with other lesions of syphilis, are generally indicative of profound cachexia, and are often the prelude to death ; sometimes, they are the first skin eruptions, but not often. Superficial suppuration is very likely to occur where the parts are frequently moist, such as

round the genitals, and the pus from these and other lesions may become inoculable, and so impetigo contagiosa supervenes in an unmistakably syphilitic child.

Another form is described by Barlow, of small cutaneous purplish-red abscesses which resemble boils, but have no core. F. Taylor has reported two cases, and I have had several.

Bullous eruptions of pemphigus character are more common in congenital than in acquired syphilis, while rupia is hardly ever seen; Schiff, however, has reported a case in a child, æt. eleven months. This so-called "syphilitic pemphigus" generally appears in the first week; the child is often born with it, either dead or alive. The hands and feet, especially the palms and soles, are the almost invariable localities for its onset, and it is often confined to these situations. In addition, the nail bed is frequently attacked, with consequent destruction of the nail, which often turns black; when less severely attacked, it is contracted* at the proximal end, as if pinched up, and spreads out like a fan at the free end. The lower part of the face is the next most common position, while the trunk generally escapes, except in very bad cases; thus in Labat's case,† the child was born with pemphigus all over, except on the palms and soles, which were red and shining; it died in twelve hours. The bullæ are either flaccid or tense, contain pus or blood, with a dusky red areola round them, or they may be on a raised, deep red base. When they rupture or dry up, greenish-yellow or dark green scabs are formed, which conceal an unhealthy-looking, spreading ulcer. The eruption is always an indication of great severity in the disease, and the child seldom lives long, either dying of general cachexia or of diarrhœa, or other intercurrent affection. I have, however, seen one severe case where the eruption was present at birth recover under immediate mercurial treatment. Milder cases, where the contents of the bullæ are clear instead of purulent, have a much better chance; but when Hochsinger speaks of twenty recoveries out of twenty-three cases, this is such a large proportion, and so contrary to general experience, that he must, I think, have included cases of non-specific pemphigus neonatorum.

* Hutchinson on Syphilis, plate viii., p. 416.

† *Progrès Médical*, October, 1880.

There is seldom any difficulty in the *diagnosis* from ordinary pemphigus; the nature of the bullæ, their position on the palms and soles, while the trunk is usually free, and the strongly developed cachexia, are enough. Its occurrence in the first week of life distinguishes it from pemphigus vulgaris, but not from the form described already as occurring in the new-born in lying-in institutions, and in bad hygienic conditions, but in this last, the contents of the bullæ are clear, they appear anywhere, and the children get well rapidly, if removed from their unhealthy surroundings.

Bullæ may, however, occur in connection with syphilis at a later stage, as in the case described with vesicular eruptions; for another example, the following may be related:—

In a child,* sixteen days old, bullæ with clear contents from a quarter to one inch in diameter were present on the trunk only; there were snuffles and a depressed nose, but no rash on the buttocks. The history was, that when thirteen days old a dry, scaly eruption appeared round the mouth, followed by the bullæ on the trunk; there had, however, been one on the neck when three days old; the mother had had eight abortions. The child died when a month old.

Nodular eruptions are among the late manifestations of congenital syphilis, but are not common; they present similar appearances to the late lesion in acquired syphilis, but are seldom so extensive. They were so, however, in a woman, æt. twenty-two, admitted into U.C.H., with evidence of congenital syphilis in the eyes and teeth, as well as in her skin and in her past history. The patient had suffered from nodular infiltration and ulceration for four years, and there were numerous scars about her, extensive serpiginously ulcerating patches, situated all over the right scapula, the upper third of the right arm, and the upper surface of the left breast, and numerous convex, hazel-nut-sized nodules were scattered over the upper part of the body. These gummatous infiltrations are almost the only skin lesions in late congenital syphilis, but Smirnoff records two cases of leucodermia in women, æt. twenty-three and thirty-three respectively, which he ascribed to their having had hereditary syphilis.

The *prognosis* in congenital syphilis is bad in proportion to

* U.C.H., Out-patient, No. 575, 1880.

the number, severity, and general distribution of the lesions ; it is bad also when they appear at or soon after birth, or if they affect the nutrition of the child. In cases occurring later than the first month, if the nutrition is good, treatment is almost always successful, though in a few cases, after all the skin and other troubles have apparently disappeared, the child, without apparent cause, becomes marasmic and dies. Treatment should always be energetically carried out to the end, as the most desperate-looking cases are often saved.

Treatment.—In spite of the most assiduous study by a host of trained observers, almost unlimited opportunities for the trial of any method of treatment, the ready response in most instances of any lesion present to the treatment suitable for it, and finally the general acknowledgment that practically there are only two drugs that exercise a decided and unmistakable influence on the manifestations of the disease, it is strange how little agreement exists as to the details of treatment, either as regards the special preparations of the so-called specifics, the best time to commence them, how long they should be continued, the best mode of administration, when one and when the other drug should be given, whether they should be given together or apart, simultaneously or alternately. All that can be done in this work is to set forth briefly the different modes of treatment chiefly in vogue, and to point out their limitations and indications according to the author's judgment and experience.

It is not necessary to go into the treatment of the primary sore in this work, beyond saying that the early excision of it has been unsuccessful, and it should be reserved for cases where the chancre is on the under surface of a long prepuce, and cannot be properly dressed ; then circumcision would be indicated. The first question to be considered is, whether specific treatment should be commenced as soon as the indurated chancre comes under notice, as is recommended by the majority of French authorities, or to follow the German school, and wait for the appearance of secondary manifestations. Hutchinson is a strong advocate for the abortive treatment, and asserts that by the early and continuous use of mercury in a mild form, generally one grain of grey powder three times a day, for from six to twelve months, it is possible to suppress the secondary stage altogether, the few exceptions being chiefly those who were intolerant of the drug.

and in them, the symptoms take a mild form. Few, I think, can claim such an almost uniformly happy experience as this, one of the chief objections to the abortive treatment being, that it has so little influence in preventing secondary manifestations, and that by depressing the health of the patient, it renders him less liable to resist the secondary effects. There are several arguments against this; but without possessing the complete confidence of Hutchinson, my own practice would be that, if there is an undoubtedly indurated chancre, a mild course of mercury should be commenced at once; but, if there is any doubt of its being a sore which will lead to constitutional infection, that little harm will accrue by waiting for further development; while if specific treatment be adopted, and no symptoms follow, the patient may have been needlessly subjected to a trying treatment, and his life may be embittered, by his erroneously believing himself to have had a disease, so often dire in its effects on himself and others.

Every one knows that mercury and iodide of potassium are the backbone of the treatment for syphilis. Other drugs, chiefly diaphoretics or diuretics, such as guaiacum, sarsaparilla, Zittmann's decoctions, of which sarsaparilla* is the main ingredient, Tayuya, Dade's bamboo extract, erythroxylon coca, sulphur, and iodoform have had an ephemeral reputation, and, though sometimes useful as adjuncts, are quite unreliable by themselves.

Hot baths, especially those containing sulphur, are useful adjuncts to the inunction cure, facilitating the diffusion of mercury through the system. Aix-la-Chapelle and Barèges may be especially mentioned.

The problem of the treatment of syphilis is not, however, so simple as it seems; few diseases require more judgment and experience, in order to secure the best results with the drugs, and, at the same time, to avoid or minimise the injurious effects which their injudicious employment will certainly produce, or which are due to a special sensitiveness to them on the part of

* Calomel and sulphuret of antimony are also added, but as they are insoluble salts and the supernatant fluid is poured off clear, there cannot be much mercury in the clear decoction. The remedy, however, still has a wide reputation in Germany, and Alfred Cooper is a strong supporter of it. For its exact composition and mode of administration, see Mixtures, F. 27, among the formulæ at the end.

the patient. While, therefore, the aim must be to thoroughly antagonise and overcome the syphilitic virus, and remove the various lesions it produces, as they arise, by the internal and external administration of these valuable remedies, the absolute necessity of keeping or raising the vital power of the patient to its highest capacity, must ever be borne in mind. In the presence of conditions, depressing both the mind and body of the patient, mercury and iodides are often powerless, while, if mercury be given so as to get its depressing effects, mild lesions are often converted into severe ones, a papule becoming a pustule, or a nodule breaking down into an ulcer, and fresh lesions appear.

Mercury may be administered by the mouth, by the skin, and by intramuscular and intravenous injection. If through the skin, it may be given by inunction, by calomel vapour-baths, or by corrosive sublimate water-baths. Corrosive sublimate baths, in the proportion of two grains to the gallon, have been recommended for congenital syphilis, but there are better methods than this.

Where there is opportunity for calomel vapour-baths, they are extremely valuable in the early stage, especially where there are extensive eruptions, as the patient has both the external and internal beneficial application of this drug. The mode of administration is given among the formulæ (Baths, F. 4). They are most suitable for robust patients before they are broken down by the disease, and may be given daily, or every other day, watching their effect, and stopping them at once, if they are depressing the patient, as they are liable to do. Where they cannot be taken daily, it may be advisable, at first, to give some mild preparation by the mouth also. They are also very useful in tertiary ulceration of the limbs, the affected limb only being exposed to the vapour.

Inunction of ung. hydrarg. is another most valuable method, especially where mercury cannot be given by the mouth; in congenital syphilis, it is almost universally employed, but for adults is not used so much here as it is on the Continent, where, in conjunction with baths, or Zittmann's decoctions, it is the chief method prescribed. The Aix-la-Chapelle method is a celebrated cure, founded on this plan; it also is explained in the Appendix. A piece of ointment, the size of a hazel nut, should be thoroughly rubbed in daily, where the skin is thin,

such as inside the thighs and arms, the flanks, etc., changing the site of inunction frequently, to prevent local irritation, or the so-called mercurial eczema being excited, and frequent baths are necessary, to place the skin in a favourable condition for absorption. The chief objection to it is, that it is a very dirty plan, requires the patient to give himself up to treatment, which many cannot do, and is difficult to carry out without exciting the suspicion of the patient's friends as to the nature of his malady; patients also can seldom carry it out efficiently for themselves, and it is expensive, and not devoid of risk of mercurialism to the rubber. One great advantage is, that damage to the digestive organs, which so often ensues from mercury given internally, is quite avoided. Hydrargolum (colloid mercury) has been recommended in ten per cent. ointment, as more readily absorbed and less irritating than unguentum hydrargyri. It is equally dirty. Calomel has been proposed as a cleaner substitute for the unguentum hydrarg., seven or eight grains a day being rubbed in. The formula is calomel one part, lanolin four parts, cocoa butter one part. Ruata and Borera claim success with this plan. Mercuriol, an amalgam with tin and aluminium, containing forty per cent. of mercury, has also been recommended, as it has been considered that mercurial inunction is really due to inhalation of mercury. Welander had bags made containing flannel on which ung. hydrarg. had been rubbed. The bag was worn constantly round the neck. Subsequently mercuriol was substituted, and Blaschko strongly advises a cleaner method, using mercolint* suspended round the neck. Five grains are placed in a flannel bag and fastened on the skin.

Injections deep into the muscles were strongly recommended by Lewin first, and latterly by many Continental authorities, and by Astley Bloxam† in this country. The buttock, where the gluteus is thickest, is the part generally selected, the trapezius, two inches above the superior angle of the scapula, being the next best place. The needle, which should be carefully sterilised in alcohol, should be plunged deeply into the muscle, and the injections should seldom be given oftener than once a week. They should not be given subcutaneously, as they are more painful, and very likely to produce sloughing.

* Ordinary cotton, homogeneously permeated with mercury, by Beiersdorf.

† *Lancet*, August 21st, 1886.

Various preparations have their advocates. They may be divided into soluble preparations, such as the perchloride, peptonate, bicyanide, sozoiodolate, the benzoate, the alanin, succinimide, the double hyposulphite of mercury and potassium. Of the above the perchloride and sozoiodolate of mercury are most commonly employed. The latter is gradually superseding the perchloride, as it is so much less painful; it is claimed that the double hyposulphite is even less painful. A quarter of a grain of perchloride in twenty minims of distilled water, with or without a quarter of a grain of common salt, is given once or twice a week. Bloxam says once is sufficient. The formula for the sozoiodolate, which is the salt I use, is sozoiodolate of mercury and iodide of sodium, of each three grains, distilled water $\mathfrak{z}\text{iv}$; inject twenty minims into the buttock once a week. The iodide of sodium is required to make the mercury salt soluble. The double hyposulphite is dissolved in distilled water the twenty-fifth of a gramme to ten grammes, a cubic centimetre of the solution is equal to one-sixth of a grain of corrosive sublimate.

The insoluble salts are calomel, the yellow oxide, or Lang's grey oil; and the salicylate,* the oxyphenate, etc. Those chiefly employed are calomel, the yellow oxide, and Lang's grey oil. Jullien recommends one and a half grains of calomel with a cubic centimetre (about fifteen minims) of petrolene every second week for several months, and then every twenty-five or thirty days. The yellow oxide is given suspended in gum-arabic water, gr. 16 of the yellow oxide, gr. 20 of gum arabic, and distilled water $\mathfrak{z}\text{j}$. Some prefer vaseline oil, but the gum solution is the least injurious. One grain is the usual dose. Lang's grey oil is made with vaseline. The parasiticide combinations have no real advantage, the effect being in proportion to the mercury contained in the salt. Other formulæ are given in the Appendix. It is claimed that the insoluble salts have a more continuous action than the soluble salts, and that calomel is gradually converted into the perchloride; but this is a source of danger, for if mercurialism sets in, no control can be exercised over further absorption. I would, therefore, never choose the insoluble salts.

The symptoms, no doubt, often yield very rapidly to the

* Symptoms of acute poisoning following a single injection of four centigrammes is recorded by Glagoleff in Russia. Abs. in *Annales de Derm. et de Syph.*, vol. vi. (1895), p. 177.

injection method, but its actual curative effects are not superior, relapses being just as frequent and severe, and indeed even more frequent,* as the injections are seldom tolerated long enough to prevent their occurrence. Besides necessitating frequent medical attendance, in spite of the denials of those who advocate them, the injections are more or less painful, and liable to produce inflammation, induration, or abscess, at the site of puncture. I would recommend any medical man, who contemplates subjecting his patient to this method of treatment, where the case is not urgent, or there are no special indications for it, to administer one or two injections to himself, and then follow the golden rule. They are also not altogether free from danger. A good many fatal cases have been reported. Runeberg reports a fatal result from the injection of one-grain doses of calomel, Kaposi had a fatal case from Lang's grey oil, and Hallopeau a case of frightful stomatitis; fat emboli in the lungs are also on record.

These serious effects may, no doubt, be obviated in all but a very few hypersensitive persons, by sufficiently prolonging the interval between the injections, and using only a small dose, not more than gr. $\frac{1}{2}$ to gr. I of the yellow oxide, for instance; but there are still some minor inconveniences. The soluble salts may, however, certainly find a place where administration by the mouth or inunction is contraindicated, in eye or severe throat lesions, in which it is important to get the patient rapidly under mercury, and it is a very convenient method for the public services, etc.

Bacelli brought in the plan of *intravenous injection*. A solution of perchloride of mercury was injected directly into the vein of the forearm. The solution is, perchloride of mercury one grain, chloride of sodium three grains, boiled distilled water one thousand grains, a small quantity of alcohol may be added to facilitate solution; stir and filter. The mode of procedure is first to apply a ligature to the arm, as in bleeding, sterilise fine hypodermic needle, plunge it towards centre of vein, and then direct it along lumen of vessel; allow a few drops of blood to ooze out to prove that the needle is in the lumen. Then apply the barrel, untie the ligature, and inject ℥xv of the solution.†

* Marshall in thirty-seven cases had sixteen relapses, some bad; in thirty-two inunction cases there were only seven relapses.

† Chopping reports eighty-four cases in which he used twenty minims of

There is no pain beyond the slight one of the needle prick, and the action on the lesions is very rapid. Thus Lewin* cured a case of rupia of two months' standing with six daily injections and a gumma on the nose in one. On the other hand, thrombosis of the vein injected is very liable to occur, and perivascular exudation is still more frequent. The advocates deny the frequency of thrombosis, and say it is due to wounding the vessel; but I saw the treatment carried out by a most careful surgeon, and three veins became thrombosed in a very few injections. The treatment, therefore, must not be lightly undertaken, and it is only suitable where it is important to get the patient very rapidly under the influence of mercury, or, where he is intolerant of mercury, by other methods. It should not be used in out-patient practice, as the patient must be under close supervision. It has not been proved that the effects are more permanent, and that tertiary symptoms are avoided.

Lastly, there is its administration by the mouth, which is, as a rule, the most practicable and convenient. The forms most employed by the mouth are hydrarg. c. cretâ and pil. hydrargyri for the milder, and calomel, the perchloride, the green and red iodides, and the bichyanide for the stronger preparations. Inasmuch as it is desirable that the patient should be kept more or less under the influence of mercury from one to two years, and sometimes longer, I prefer the mild preparations, which are efficient, and at the same time less likely to produce irritation of the alimentary canal, with griping and purging. One to three grains of grey powder, or blue pill, are given three times a day, guarded, when necessary, with two or three grains of Dover's powder, and continued till the eruptions or other symptoms are gone, and the patient begins to show evidence of the constitutional effects of the drug, such as slight salivation or tenderness of the gums; the dose or frequency is then reduced, until the patient can just tolerate its influence without unpleasant effects. Frequent brushing of the teeth, and rinsing the mouth with alum and chlorate or permanganate of potash solution, should always be enjoined, and the patient should smoke very little, or not at all. About every six weeks, a week or ten days'

a one per cent. solution of the cyanide daily without any thrombosis. Easily controllable salivation occurred in two cases.

* *Lancet*, February 18th, 1899.

course of iodide of potassium, in three to five grain doses, three times a day, may be substituted for the mercury, in order to bring back into the system, in an active condition, the mercury which had become inert in the tissues. If, at the end of six months, the patient has been free from symptoms for two or three months, he might wait a month, go to the seaside or other invigorating climate, and then have another six weeks of mercury only. In this way a year may be spent, and if he still remains free, then he may have a six weeks' rest and a six weeks' mild course of mercury, to be followed by a week or two of iodide of potassium, and so on through another year; if still free, he might leave off treatment, watching carefully for any relapse, which must be the signal for the immediate resumption of mercury. All through the course, the patient should guard against exposure to chills by wearing flannel next the skin, etc., keeping regular and early hours, avoiding sexual congress for his own and others' sake, and other excesses of all kinds, taking moderate exercise, and spending as much time in the country, or sea-air, as his circumstances permit. His diet should be generous but digestible, and as for alcohol, the less the better as a rule, though claret and the lighter wines may be permitted sometimes.

The green iodide, calomel and opium, etc., are preferred by many; they are valuable when it is important to get the patient under the influence of mercury in a short time, as in threatened iritis when gr. $\frac{1}{2}$ to gr. I of the green iodide, or calomel gr. 2, pulv. opii. gr. $\frac{1}{4}$, may be given every four hours. Otherwise, I prefer the mild preparations, as the green iodide is so liable to produce irritation of the alimentary canal, in consequence of which the drug may have to be suspended for a while, and valuable time is lost, besides that such irritation is more readily again excited, after it has once occurred. Moreover, in urgent cases intramuscular or intravenous injections might be employed without damaging the digestive organs.

In whatever way mercury is administered, great care should be taken to avoid severe salivation; when large doses are being given, the patient should be seen daily, and with smaller doses—until his tolerance, or intolerance, has been ascertained—he should be seen two or three times a week; at the same time, it is often necessary to push the drug up to the point of tenderness of the gums or slight salivation. If from idiosyncrasy, or other

cause, salivation occurs, the bowels should be freely opened with saline aperients, the mouth frequently washed out with chlorate of soda or potash gargles, and the soda salt taken internally in ten or twenty-grain doses, and some give even larger doses. Iodide of potassium must not be given at first, for though it eliminates the mercury, it brings what was inert and deposited in the tissues back into the circulation, and may thus aggravate the salivation to a dangerous degree.

In the tertiary or relapsing stage, mercury is often required, but it must be given in small doses, and generally with tonics; the perchloride gr. $\frac{1}{32}$ to gr. $\frac{1}{16}$, combined with three to five grains of iodide of potassium, forming the red iodide of mercury, which is dissolved by the excess of iodide of potassium, is one of the favourite combinations; it may be given with any bitter tonic, except cinchona. This combination, often called the mixed treatment, is by many given in the secondary stage also. This, in my opinion, is seldom a good plan, as the mercury is eliminated by the kidneys almost immediately after ingestion, and very often the symptoms return almost immediately after its being left off. Even in the tertiary stage, in which it is often most effectual in removing the lesion, a separate very mild course of mercury is required subsequently. Reduced iron, grey powder, and chamomile extract, a grain of each, is also a good combination. Only in visceral syphilis, with threatening symptoms, are the more vigorous methods of giving mercury required.

Iodide of potassium, sodium, or ammonium have all their advocates, but the potash salt is the one chiefly employed, on account of its great diffusibility, and is the salt referred to unless otherwise stated. It is useful in all stages, but in the secondary period is used by me only to wash the insoluble albuminate of mercury out of the tissues; many believe, however, that it is really curative. Some believe in combining the three iodides.

In the tertiary period, it is most valuable, on account of its wonderful capacity for procuring the disintegration and absorption of gummatous growths or infiltrations, wherever they may be situated, but especially in bone. In the early stage, three to five grains may be sufficient, in the later, five to ten grains are enough for most cases, but some people require larger doses before any effect is seen, twenty, thirty, even sixty grains freely

diluted, three times a day, being given with benefit; but it is always wiser to begin with a moderate dose, and increase it as far as may be necessary. Some patients, on the other hand, are very sensitive to its action, a few grains exciting severe headache, coryza, etc., so that the patients think the remedy worse than the disease; such patients may, however, be taught tolerance by beginning with one-eighth of a grain, and increasing by similar increments daily until a grain is attained to, and then adding a quarter of a grain to each dose till three to five grains are reached. Leistikow claims that in such cases iodvasogen (6 to 10 per cent.) inunctions produce all the good effects of the iodides, and only rarely produce nasopharyngeal catarrh; forty-five grains may be rubbed in each day for three weeks.

It is usually preferable to prescribe the iodide with bitter tonics, such as gentian, calumba, etc., and give it after food, to prevent disturbance of digestion. Carbonate of ammonia or sal-volatile is often prescribed with the idea that the action of the iodide is thereby increased and its tendency to produce coryza diminished. I have, however, never seen any reason to believe that it does one or the other, but there is no harm in adding it. Bumstead says that the chloride of ammonium increases the action of the iodide if given in equal quantities, but it is a very nauseous salt. Belladonna and nux vomica are also said to prevent coryza, but their efficacy is not very great. Some of the gastric symptoms may, it is said, be avoided by giving the salt with maltine and pepsine wine. In some people, its prolonged use produces gout, probably by setting up catarrh of the alimentary canal. I have sometimes found it necessary to prescribe a small dose of bicarbonate or citrate of potash with the iodide in such cases. The diminution in sexual power and appetite, produced by prolonged administration, can generally be overcome by general and local tonics after the omission of the iodide. The prevention and treatment of iodide eruptions are discussed elsewhere.

It should always be borne in mind that, while the iodides act in the most gratifying manner in healing ulcers, removing infiltrations and gummata, relieving pain or sleeplessness, etc., their effect seems to be exerted locally on the diseased products, while it has little or no power over the virus itself, so that the symptoms are only too apt to return sooner or later, when the iodide has ceased to be given; in other words, the disease is

scotched, not killed, by iodine. Mercury, and mercury alone, aided by time and good hygiene, has any real curative influence.

The iodides of sodium and ammonium are preferable sometimes where large doses are required, as in large doses, potash salts are very depressing to the heart; the ammonium salt should always be prescribed with carbonate of ammonia to prevent its too ready decomposition. Although they contain more iodine in proportion, on account of their different atomic weights, in other respects, on the whole, they are less efficacious. Rarer salts, such as the iodides of strontium, lithium, calcium, and rubidium, have had their advocates, but the only one of any real value is the rubidium salt, which is said to be nearly or quite as good as the potassium iodide and better tolerated.

Larrieu's method is to give three minims of tincture of iodine with fifteen grains of iodide of potassium in a half a tumbler of water every morning before breakfast. It has the advantage of freeing the patient from medicine-taking for the rest of the day. I have found it useful in the tertiary stage, but he uses it at all stages without mercury, unless there is iritis or other urgent symptoms.

A general tonic treatment is frequently necessary at all stages of the disease. Sometimes iron may be combined with the specifics, *e.g.*, the syrup of the iodide of iron; cod-liver oil, with or without iodine, is also often necessary. Sometimes it is best to suspend the specifics and give the mineral acids and nux vomica or cinchona, quinine and iron, etc. It is instructive, sometimes, to notice how, when specifics fail to exert their wonted influence, after a course of tonics, a sojourn at the seaside or in the country, or careful feeding up of a badly nourished patient, the mercury or iodide again becomes efficacious.

Iodipin is another form of giving iodine for which good results are claimed. It is made in 10 and 25 per cent. strength dissolved in sesame-oil; ʒj to ʒiv of the 10 per cent. solution may be given three times a day either in capsules or in hot milk. It may also be injected into the buttock, a Pravaz syringe-ful with a large nozzle being required.

The *local* treatment of syphilides, though frequently unnecessary, generally hastens their disappearance, and may be essential to effect it. When they are extensive, the calomel vapour-baths, already described, are the best means of getting at them. For the

superficially ulcerated throat, a perchloride of mercury gargle two to four grains to ℥viij of distilled water, used three or four times a day, soon produces improvement; or calomel may be applied by local volatilisation, or, what is quite as good, and simpler, by connecting a glass tube containing the calomel to an indiarubber ball and puffing it on. Mucous tubercles also soon yield to the local application of calomel, or a slight application of sulphate of copper or of the stick of nitrate of silver sometimes hastens their departure, as well as that of superficial ulcerations, but it should be only sparingly resorted to. The parts should be washed two or three times a day with a 1 to 1000 corrosive sublimate solution, and the adjacent surfaces separated by absorbent or iodoform wool. Ulcerations, whether secondary or tertiary, may be cleaned up and healed, by local calomel fumigations, by dusting on iodoform or iodol two or three times a week, and using black or yellow wash on lint cut to the size of the sore and covered with oiled silk. When, as in rupia, they are too numerous, or in awkward positions to keep on dressings, iodide of starch paste, recently made and painted on, generally induces them to heal in a kindly way. I have found it a very convenient and effectual plan for both rupial and tertiary gummatous ulcers to pack each ulcer with alembroth wool night and morning; foul ulcers clean up and form healthy granulations very rapidly, and where the ulcers are numerous the facility of application adds to its value.

Nodules or infiltrations of the skin, whether secondary or tertiary, may be treated by rubbing in gently, unguentum hydrargyri, either pure, or diluted if there is much hyperæmia. Oleate of mercury 2 to 10 per cent. is more cleanly than the ung. hydrarg.; the mercurous salt is the more efficacious, and should be made by chemical combination. Mercurial plasters are also convenient and efficacious; the emplastrum hydrargyri of the English or German Pharmacopœia, Beiersdorf's paraplaster of 50 per cent. mercury and 7.5 per cent. carbolic acid, and the emplastrum Vigo of the French, are good examples of these plasters. They may also be used round ulcers packed with alembroth wool as above. Hypodermic injection of one or two grains of iodide of potassium, in a dilute watery solution beneath the lesion, acts very rapidly, but is rather painful.

Eruptions on the face are a great trouble to the patient; for these the weaker preparations of mercury are generally pre-

ferable, the ammoniated mercury ointment twenty grains to the ounce, the oleate of mercury 1 or 2 per cent., and sometimes at night, the diluted nitrate or ung. hydrarg. When there is much hyperæmia, it is often desirable to commence with ordinary astringents, such as calamine lotion, as in such cases, the mercurials may be too stimulating at first. Rhagades at the mouth or nostrils yield to painting with hyd. oxid. flav. gr. 10 to adipis ʒj, or to the calomel cream of the Lock Hospital, calomel ʒj, oleum olivæ ʒij.

The obstinate palmar and plantar syphilides of the tertiary stage become amenable to treatment, if the thickened epidermis be first removed; it may be done by rubbing it down with pumice stone, a corn rubber, or glass paper, or by the application for several days of Unna's salicylic plaster; ung. hydrarg. should be subsequently rubbed in. Some use a potash lotion for the same purpose, but if there are any fissures, it is very painful. On the soles, where the horny cuticle is often very thick, it may be first shaved down with a razor, but without this preliminary, the treatment is very unsatisfactory. The fissures, ulcers, white patches (leucoplakia), etc., of the tongue often give great trouble in the relapsing period. All sources of irritation, such as smoking, the use of condiments, etc., should be interdicted, and irregular or tartar-covered teeth removed. The mouth should be washed out with weak Condyl's fluid when the teeth are cleaned, which should not be less than twice a day, and then a 2 or 3 per cent. solution of chromic acid should be painted on daily; this generally gives great relief, and is not very disagreeable. Less pleasant, but useful in obstinate cases, is a 1 to 3 per cent. perchloride of mercury solution, but the brush must not be dipped directly into the bottle, or the solution soon gets inert. In severe cases, Hutchinson's plan of painting on the strong acid nitrate of mercury, though painful at the time, will give relief for a month or two, and does not require to be used more than once in three months.

In tertiary syphilis, the large part played by local irritation in producing the lesions must be borne in mind, and as far as possible means must be adopted to prevent such irritation.

In *congenital syphilis*, inunction of ung. hydrarg. is generally the best method; a piece of ointment the size of the end of the finger should be rubbed on the flannel binder daily, and

the child's movements work it in, the position for its application being changed from time to time, to prevent local irritation. This treatment may be continued until all symptoms have disappeared, and for a month or two longer, but with diminished quantity; cod-liver oil, with or without maltine, and steel wine or other form of iron, are often necessary adjuncts. After the mercury has been left off, syrup of the iodide of iron is a suitable tonic. The child should be kept under observation for at least twelve months. Where there is much skin eruption, the ointment cannot always be applied, and then a grain of hydrarg. \bar{c} cretâ can be given three times a day to the youngest infant, and if, after some time, diarrhœa is produced, some pulv. cretæ comp. may be given with it, but this is seldom necessary. The erythema of the buttocks is best treated by dusting on ζ ss to ζ j of calomel to ζ j of starch powder. To the condylomata, or mucous tubercles, a little pure calomel may be applied, paying great attention to cleanliness, and keeping the parts as dry as possible; changing wet napkins at once, is of course necessary. The nostrils must be frequently cleared out, and if the child cannot suck well, it should be fed with a spoon without delay. Careful attention to hygiene in every way is highly important. Except in the way already indicated, local treatment is seldom required for the skin lesions, the effect of the internal administration of mercury being almost magical in the majority of cases, unless treatment has been too long delayed, so that the nutrition has already suffered considerably; indeed, as a rule, the prognosis is good or bad in proportion to the nutrition of the child when it first comes under treatment.

LEPRA.*

Deriv.—λέπρα, *leprosy*.

Synonyms.—Leprosy; Elephantiasis græcorum; Leontiasis; Satyriasis. *Fr.*, La lèpre; *Gr.*, Der Aussatz; *Norweg.*, Spedalskhed.

Definition.—An endemic, chronic, constitutional disease analogous to syphilis, and varying in its morbid manifestations, according to whether the brunt of the disease falls on the skin, nerves, or other tissues.

* *Literature.*—Danielssen and Boeck. *Traité de la Spedalskhed* (Paris :

Leprosy has ceased to be one of the diseases of England* since the sixteenth century, and is now met with here only as an importation; but it is still rife in Norway, and to a less extent on the shores of the Baltic, and of late years in Russia, it is said to be spreading in the south of France and Spain, and it is frequent on the northern littoral of the Mediterranean, Turkey, Roumania, and the whole Balkan peninsula, and some other parts of Europe. Many instances of its different forms have come under my care at various times, but it is only from those who have long studied the disease in its native haunts—such as Danielssen and Boeck, and Hansen in Norway, Vandyke Carter in India, and Hillis and Beaven Rake in the West Indies—that we can glean a complete account of its numerous manifestations, and in the following description I have followed those writers, especially Hillis, pointing out where my experience differs from theirs.

The disease occurs in three forms—the Nodular, the Maculo-anæsthetic, and the Mixed.† The nodular is the most common in Europe, the maculo-anæsthetic in the tropics, and the mixed is nearly always less common than either of the others. Although they form a pathological unity, these varieties are so distinct clinically, as to require separate description. In the nodular form, the brunt of the disease falls upon the skin, in the maculo-anæsthetic, on the nerve trunks, and in the mixed, on both nearly equally.

In advanced cases, the tendency in a large proportion is to merge into one another.

1848. French translation). Vandyke Carter on Leprosy and Elephantiasis (1874). Hillis, *Leprosy in British Guiana* (1881). Leloir, *Traité de la Lèpre* (Paris: 1886). Thin, *Leprosy* (1891), a *résumé* in 280 pages. The Journal of the Leprosy Committee. Leprosy in its Clinical and Pathological Aspects, by Hansen and Looft. Translated by Norman Walker, 1895. Five clinical and eight microscopical plates. *Trans. Berlin Leprosy Conference*, 1897. *The International Journal, Lepra*, vols i. and ii. Babes, *Die Lepra* (1901), and Santon, *La Léprose* (1901), with illustration and plates.

* In *Lancet*, Sept. 16th, 1899, Dr. Ross McMahon records a case of a man who had never been out of England, but such a case would require to be reported on by experts before it could be unreservedly accepted.

† These correspond with the terms in previous editions of tuberculated, non-tuberculated, and mixed tuberculated of Hillis; the two first terms are those of Hansen.

Nodular Lepra constitutes over 50 per cent. (Kaurin says 70 per cent.) of the cases in Norway, about 20 per cent. in the West Indies, and not more than 10 per cent. in the East Indies. No less than five stages may be recognised: first, deposit with prodromata and fever; second, eruption; third, nodulation; fourth, anæsthesia (not constant); fifth, ulceration. The prodromata which nearly always attend the onset are of the following kind: debility, depression, dyspepsia, diarrhœa and drowsiness, listlessness, a frequent sense of chilliness, especially at night, profuse perspirations and marked vertigo, temporarily relieved by recurrent epistaxis. Then, perhaps, after a chill or other depressing influence the febrile symptoms set in.

Their onset is marked by a rigor, and a temperature which may rise to 104° . The pyrexia is of a remittent, an intermittent, or rarely of a continuous type, and is often mistaken for ague; the drowsiness and sweating become more marked, the patient feels restless, the tongue is red, the pupils sluggish, and the pulse quick and feeble. These febrile symptoms may set in abruptly without any prodromata, it may be, several months or even years after exposure to the leprous influence. After they have lasted for a variable period of days, weeks, or months, the exanthem or "leprous spot" appears, coming first with œdema of the eyelids, on the prominent parts of the face and ears, and then on the limbs, occupying the front of the forearms and the outside of the thighs. The eruption is of an erythematous character, varying from a bright to a purplish or mahogany red tint in fair people, and there is leprous deposit, not mere hyperæmia, from the first. It is in well-defined, shiny, slightly raised patches, of from one to several inches in diameter, and distinctly hyperæsthetic; these patches may fade to an orange tint or altogether disappear and reappear after an interval, each time with febrile symptoms, and this may go on for weeks or months before the next stage of nodulation sets in, or they may be persistent, becoming more conspicuous if the patient gets warm.*

In a young lady, æt. fourteen, they were very bright, and the forehead and chin were something like an erythema nodosum in

* Francis S., æt. fourteen, U.C.H., born of healthy Scotch parents in the West Indies; while there he had repeated attacks of what were considered to be erysipelas of the right leg going on for seven years, and it was not until he had been six months in England that nodulation set in, after a

the wrong place, but they had been out several months. The disease began with symptoms supposed to be due to rheumatic fever seven years after she left Ceylon, she having been quite well in the interval. On the other hand, there may be a total absence of general symptoms, not only when the skin eruptions are of very slow development, but even when the eruption comes out somewhat acutely. Thus, in a boy of seven from British Guiana, who had been perfectly well until six weeks before I saw him, a red patch came out on the left cheek one inch across, then the right ear became red and swollen and shapeless, and other lesions appeared in various parts of the trunk and limbs. The boy had not been, and was not when I saw him, unwell in any way whatever, and was bright and lively. I have seen diffuse erythema over the face and greater part of the body.

After the first, or one of the subsequent exanthematous attacks subsides, the eruption fades, crops of minute pink elevations, grouped or scattered, appear on the site of the previous rash, the papules enlarge to the size of a split pea, and form yellowish-brown nodules, and some of these may enlarge much more, even to the size of a hen's egg, or they may gradually coalesce into a diffuse infiltration, or the infiltration may be produced directly, by the erythematous patch thickening instead of resolving, and may thus form regular plateaux of large size, and, like the nodules, of yellowish to dark brown colour. In fair races, when the disease is of moderate severity, ovals or circles with broad borders and clear white centres may arise, and fresh nodules may also develop on the infiltrations. As a rule, nodulation does not develop until from three to six months after the commencement of the disease; as the nodules and infiltrations become fully developed, the hyperæsthesia subsides, and may be replaced by diminished sensibility or even complete anæsthesia, if the infiltration is considerable, simply from pressure of the leprous material on the peripheral ends of the nerves. Nodules may come anywhere, but they are most common on the face, limbs, breasts, scrotum and penis, round the arms and in the axillæ, but are rare on the back, neck, soles and palms,

severe rigor and febrile symptoms of a few days' duration, but with no erythematous eruption, the first nodules appearing on the site of a recent burn on the heel. The subsequent course was very much the same as above described.

and still more so on the elbows and knees, while they are said never to occur on the scalp* and glans penis.† The mucous membranes also get involved, including those of the eyes, nose, mouth and tongue, larynx, trachea and large bronchi, uterus and vagina. The fate of the nodules and infiltrations varies; some resolve and leave only stains, others atrophy, but leave atrophic scarring, while others again soften, break down, and ulcerate, forming indolent, sharply defined, red-glazed sores with yellow "glairy mucous discharge of peculiar odour," which at first can be healed with appropriate treatment, but not as the disease becomes advanced. When the disease is fully developed, the face gets the characteristic leonine appearance from the thickening of the skin between the natural wrinkles of the forehead, which thus appear deepened, and give a stern and aged look even to children; the cheeks, unless the nodules remain discrete, look enormously puffed out and pendulous, and the skin is very soft and satin-like; the lips are swollen and everted, and with the nose and chin are covered with nodules; the ears project conspicuously, are often, even at an early stage, much thickened and covered with nodules, and the lobe especially is very large, soft, and pendulous, and may be the only part of the ear attacked; the hair is preserved on the scalp, but is lost elsewhere; the nails are thin and papery, split, flake, and drop off, sometimes to be renewed in the shape of horny pegs, but they may recover completely.

A somewhat different picture is presented in many cases in which nodulation is a late manifestation, there being simply a uniform infiltration deepening the natural lines, but the surface is otherwise smooth. In white people there is a yellowish-brown tint or in cold weather a slate-coloured lividity. Nodules appear eventually.

In males, the testicles atrophy, the breasts enlarge, and sexual power is lost; women become sterile; the voice gets croaking from nodules in the larynx, there is snuffling from thickening of the nasal mucous membrane, a kind of pannus may ensue on

* In John C. N., U.C.H., a mixed case, there were a few nodules on the scalp; in Evan S., U.C.H., there were one or two on the palms. References to other palmar cases are given in a paper by Montgomery, *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. xvi. (1890), October No.

† Glück has seen nodules and flat infiltration on the glans penis in ten out of forty cases, *Lcpria*, vol. i. (1900), p. 10.

the conjunctiva and cornea, and interstitial keratitis and corneal nodules, and, still worse, a chronic irido-cyclitis may lead to blindness.* Dr. Lie has found lepra bacilli in almost all the structures of the eye, even in an apparently cured maculo-anæsthetic case.

From time to time, exacerbations occur, with enlargement of the lymphatic glands, especially the femoral, and febrile symptoms of the same character as before ; and after each attack, fresh nodules are formed. Acute orchitis occurred in a case of Hallopeau's. These attacks occur about four times a year, at the change of the seasons, in the tropics (Hillis),† but less frequently in colder climates, and are the milestones on the downward road. Ulceration eventually sets in, at first only in single nodules and spreading slowly, but sometimes it is phagedænic and rapid, and in either case, enormous areas may get involved, and lead to the death of the patient by exhaustion, or death may ensue from interference with the air passages or from other internal deposits. Forty per cent. perish from the direct effects of leprosy, while another forty per cent. die from renal and lung complications, and the rest from diarrhœa, anæmia, etc. The mutilations of the maculo-anæsthetic form are never present in this.

In the dark races, the "leprous spot" is a bright red, the sweatings are accompanied with oiliness, and the skin is always very greasy, with dilated sebaceous openings. The nodules at first are translucent and quite solid, but eventually get blacker even than the black skin that they are on ; this is true also of the involuted erythematous exanthem. The surface is very scaly, sometimes so much so, as to mask the disease. In advanced cases, Hillis describes a peculiar mottling, like a richly grained wood on the belly, and mapping out the spinal cord behind.

In a large proportion of cases there are comparatively few

* For a full account of the eye changes, see Bull and Hansen, *The Leprous Diseases of the Eye* (translation, with coloured plates, published in London, 1873), and *Leprosy as a Cause of Blindness*, C. F. Pollock (Churchill: 1889). *Die Lepra des Auges*, by Syder Borthen, with *Pathology* by H. P. Lie, published by W. Engelmann, Leipzig, 1899. Also "Notes on Ocular Leprosy," by A. Neve, *Brit. Med. Jour.*, May 12th, 1900, who reports lesions of lids, conjunctiva, cornea, iris, and globe, but not the lens, in Kashmir Asylum.

† Some of my cases have had intervals of several years between the febrile exacerbations.

lesions on the trunk even in advanced cases, the face and limbs being chiefly affected.

Variations.—It must be borne in mind that skin lesions may develop without any prodromal manifestations, either acutely or slowly and insidiously. Thus a man on the Zambesi was quite well until he had a sunburn on the shoulder from a hole in his shirt; the next day, red spots broke out all over his body and limbs, and increased till he was a uniform red colour. This was soon followed by great pains in the feet, and the disease developed on the usual lines, but it was a year before the features thickened very noticeably. In a gentleman, who had contracted the disease in India three years before, the sole manifestations were yellowish-brown slightly raised, hemp-seed to large pea-sized papules, rather numerous on the trunk and limbs. He had not been in any way different from his usual health, and there were no sensory symptoms before or following the eruption. Three years later also there were no fresh symptoms beyond an increase of the skin lesions; a few months later most of the eruptions had disappeared.

In a boy of seven from British Guiana, a red raised patch on the left cheek was the first sign without any general symptoms. Other red patches developed rapidly, but without disturbing the general health.

In other cases, again, there may be one or two nodular lesions which have developed slowly without any other symptoms for months or years. In a case of Pellizzari's, the only lesion was an achromic area surrounded by a pigmented area on the right arm. Hansen's bacillus was found.

In children, small nodules come comparatively early, on the alæ nasi and lips.

When there is an hereditary taint, Hillis has observed "that sores or abrasions become indolent and unhealthy, general diseases are less amenable to treatment, and in the black races the skin is scaly, shiny, and variegated, the lymphatic glands are enlarged, and the patient has a cachectic look, the features are coarse and unsymmetrical, the head looks too large for the body, the functions are imperfectly performed, and the skin has a peculiar soapy feel, while mentally the patients are dull, listless, and apathetic." Voight* made a careful examination

* Vrach xx. (1899), p. 485. Abs. *Amer. Jour. Cut. Dis.* vol. xvii. (1899), p. 323.

of the tissues of a child of five weeks, who was born in a leper asylum of leprous parents, and found no bacilli or other leprous changes in the skin or other organs.

The disease comes out in such cases before they are twenty, generally from ten to twenty, but rarely under three years of age, very few, if any, under twelve months, and there are only one or two more than doubtful instances on record, of the infant being born with it. The absence of congenital cases will be discussed under heredity. But Danielssen and Boeck record that the parents of some affected children have stated that they were born with bluish spots, on which nodules subsequently developed.

Maculo-Anæsthetic Lepra is the most common tropical form, constituting two-thirds, while in Norway it is only one-third, of all the cases.

Three stages may be recognised in the course of the disease, but they may be ill-defined in some cases :—(1) that of development; (2) of spreading; and (3) of permanency. The first lasts one or two years, and includes the prodromata, the eruption, and the commencement of atrophy. The prodromata differ much from those of the nodular form. Febrile symptoms are absent, but a frequent sense of chilliness, especially towards evening, is experienced; malaise, and perhaps gastric and circulatory disturbances, may be present. But the most characteristic symptoms are pain and tenderness in various places, a general hyperæsthesia of the skin, and shooting lancinating pains, compared to electric shocks, which traverse certain nerves, especially the ulnar, the median, the peroneal, and the saphenous, accompanied by a burning sensation, and tenderness along their course. * In a gentleman, æt. thirty-two, from Jamaica, the first symptom, four years before, was intense itching between the toes, and soon after brown spots appeared on the leg. In the same way, the involvement of other nerves was marked by severe itching.

* In the case of a boy, J. H., E.L.H., the symptoms began at the age of four years, in Suffolk, apparently with an attack of ague, eight months after his leaving Singapore. The eruption preceded by a very short interval the nerve symptoms, which commenced with numbness and weakness of grasp; but there were no pains nor early bullous eruption, and in about twelve months his ulnar nerves were completely paralysed, and the median partially. Subsequently complete paralysis of the hands developed, and

followed by numbness, but he never had pain, but felt pricking and "pins and needles" down the limb when the peroneal or ulnar nerves were tapped. Drowsiness, lassitude, and depression were the only general symptoms. Weakness of grasp and numbness in the course of the nerve are early symptoms, and the ulnar is generally the first to suffer, the peroneal being the next commonest. There may be loss of sensation to pain, touch, heat, and cold, or tactile sensation may be preserved and heat, cold, and pain lost, as in syringomyelia, which may be simulated, or perhaps produced.* According to Susuki, the tendon reflexes are exaggerated in anæsthetic leprosy. Numerous small bullæ often develop on the fingers and toes in association with the shooting pains, and occasionally the condition known as "glossy skin" may supervene with the characteristic burning pain.

Within a year, the more special eruption breaks out, the most frequent positions being the back, shoulders, back of the arms, necks, thighs, round the knees and elbows, on the face and sometimes in the course of nerves, especially the musculo-spiral; they are very rare on the palms and soles.† The spots or patches come out singly as a rule, are one or two inches in diameter, well defined, but not raised, and of a pale yellow colour. They may itch or burn, but are not always hyperæsthetic, though Hansen usually found them so, and rarely anæsthetic at this stage; but the sweat secretion is absent in them. Fresh patches continue to come out from time to time, but unattended with special symptoms. Sometimes some of the muscles waste, and there is contraction of the little finger, while sensation in the course of the affected nerve is diminished by this time if it has not been before, and thus the second, or spreading stage, is reached in a year or two from the commencement.

the fingers were clawed. Bullæ came in cold weather, and the characteristic, peripherally spreading eruption appeared, preceded by an erythematous exanthem; but there was only diminution of sensibility in the atrophic area. In this case, the ulnar nerves, which were much thickened, were stretched without effect. He was under observation for six years, and died, æt. thirteen, in the hospital with pyæmia and ulcerative endocarditis; but this did not appear to be dependent upon the leprosy, as he had been exposed to septic influences.

* In a case reported by Hallopeau and Jeanselme these symptoms appeared during an intense erythrodermic attack.

† Montgomery, *loc. cit.*, one case, and quotes two of von Bergman's.

With the exception of those on the neck, the patches spread peripherally, clearing in the centre and forming irregular ovals or circles, or, meeting with others, enclose large, gyrately margined tracts. The border is now distinctly raised, hypersensitive, from an eighth to half an inch across, of a yellowish-brown colour, and made up of closely aggregated papules which have coalesced more or less, or there may be minute vesicles on them at the edges. The centre is atrophic, preternaturally white, thin, wrinkled, hairless, scar-like, and dry from the destruction of sweat glands, and hence, later on, a powdery desquamation is observed.

Anæsthesia is nearly always present in the atrophic patches as well as in the course of the affected nerves, and slowly extends its area; as a consequence, the patient often gets burns and other injuries unconsciously, and *perforating ulcer* of the foot, starting from a slight injury, may ensue, but it is most common in those who walk barefoot. Another result of the paralysis of the nerve function is the formation of solitary, large bullæ on the extremities. They arise mostly in cold weather, or from some local injury, and leave a very indolent ulcer. They differ from the early bullæ, therefore, in size, number, and cause, the early ones being due to an irritative, the late, consequent on a paralytic condition of the nerve. Fissures of the heel are also common, and dark-coloured hyperkeratoses may be seen symmetrically on the front of the legs or back of the hands (Hansen). The diseased nerves can be felt to be thickened, especially the ulnar at the elbow.*

Paralysis is usually a late symptom, and produces flexion of the second and third phalangeal joints, but the first remain straight, much wasting of the muscles and wrist drop ensue, and the nail nutrition is damaged so that they become like talons; next interstitial absorption of the bones takes place, or a larger necrosis may occur, leaving the nail still attached to the stump (the so-called *lepra mutilans*. The carpal bones are seldom destroyed). Sleeplessness is sometimes a trying symptom, but otherwise the general health suffers comparatively little, and much of the lost strength may be regained for some time when the permanent stage is reached, which is generally in about ten years.

The eruption now remains stationary, though by this time nearly all the body surface may have been traversed by it, so that

* See J. H.'s case, in previous note.

the whole skin is atrophied and white. Other nerves, such as the third and seventh, may be paralysed, and ectropion and the other consequences of these paralyses ensue, or some muscles of the leg may be paralysed.

Ulcerations are common, but less extensive than in the nodular cases, though they are often deeper, either from moist or dry gangrene, which spreads until it reaches a joint; a line of demarcation is then formed, and nature performs amputation, often very neatly. Although this may be repeated from time to time, the process is slow and not extensive on each occasion, so that the patient's strength is wonderfully preserved, and the sexual power is retained up to a very late period. Ultimately, however, the constitution is undermined, and he succumbs from various causes.

Death occurs in two-fifths of the cases from the direct effects of leprosy, such as ulceration, gangrene, marasmus, or general debility, induced by the leprosy poison. Muco-enteritis accounts for nearly as many, and the rest die from various complications, but nephritis is not a special cause as in the nodular form, and probably the muco-enteritis is largely climatic. Cases usually last from ten to fifteen years, though life may be prolonged for thirty or even forty. In some of these, the disease has really died out, the skin lesions having disappeared, and only the results of the nerve damage left.

In negroes, the eruption is of a bright yellow, and is much more conspicuous from the contrast with the dark skin; the vesicles that border the edge of the eruption in the spreading-stage are also more distinct, and when the eruption has traversed a large extent of surface, the atrophy of the pigmented part of the skin is much more striking than in the fair races.

In children, unless the manifestations of leprous cachexia mentioned by Hillis are present, there is no special difference in the maculo-anæsthetic cases from those of adults.

Variations.—In the maculo-anæsthetic form, the insidious development of skin lesions without other symptoms is more common even than in the nodular form. Pigmentary anomalies either plus or minus may be the earliest symptoms, and according to Hansen and Looft the skin affection is always the first definite symptom of the disease, but this is not in accordance with the observations of others. A woman, æt. thirty-six, who had travelled in India for a year, eighteen months later developed

rings on the left thigh and forearm. The lesions were round or oval, one to three inches in diameter, with a raised brownish-red border a quarter of an inch wide and a slightly papular irregular outline; the centre was faintly atrophically scarred, and there appeared to be slight diminution of sensibility. There were only half a dozen such lesions, and no other manifestation of any kind; during six months that she was under observation a few fresh rings slowly appeared, but two years later all had disappeared again. Nerve trunk symptoms may or may not develop later. In a boy of sixteen, the sole lesion was a perforating ulcer of a big toe, and anæsthesia of a great part of the left foot. This had been going on for two years. Mutilating whitlows with anæsthesia may also occur, and if Zambaco Pacha's views be accepted, Morvan's disease as seen in Brittany is only attenuated leprosy. There are, however, a few cases of indisputable leprosy in Brittany, but the long yearly visits of the fisherman to Iceland must be remembered as a probable source of the disease; but Jeanselme reports a case he believes to be autochthonous.

Mixed Lepra is the least common form, constituting about one-sixth of all cases; about half are hereditary according to Hillis, and often each parent has had a different form. In British Guiana, however, Hillis found in one hundred and eighty-eight cases the following proportions: nodular, two; mixed, three; maculo-anæsthetic, six. It begins sometimes with nodular and sometimes with maculo-anæsthetic symptoms, but most frequently the latter symptoms take the lead for a few months, and then with fever and the usual phenomena, nodulation occurs. Destruction of the cartilages of the nose sometimes ensues; the soft palate also may be destroyed by ulceration, and constitutes special features of this form. For the rest, the symptoms are a compound of the other two varieties.

The *prognosis* is bad, and if nodulation precedes the anæsthetic symptoms, the progress is more rapid.

The *diagnosis* requires care sometimes, to distinguish it from syphilis, but the presence of anæsthesia will be a certain criterion.

The following is a good example of its mode of onset and course:—

John C. N., æt. twenty-two, came to University College

Hospital in January, 1885. He was born in Bombay of healthy, well-to-do English parents; he was suckled one month by a native nurse, and lived in Bombay until he was sixteen years old. He ate fish, but it was always quite fresh. The disease began in October, 1879, eighteen months after his return to England, after sitting in wet clothes for three hours, with vomiting, great pain, and swelling of the limbs, ascribed to rheumatism, soon followed by severe shooting pains down the arms and legs, and great depression, and these pains continued more or less for two years, when he returned to India. Eighteen months later, an infiltrated patch appeared, with pain and swelling on the right calf; anæsthesia in the left forearm and calf developed in 1882; next a brown patch came on the lower jaw, and in 1883 nodules appeared on the ears, and later on the face and scalp. The disease after this progressed in the usual course; phthisis developed in the beginning of 1886, and he died with general tuberculosis in September of that year.

Etiology.—This must be considered as regards its production and propagation.

Concerning *production*, neither climate, soil, race, malaria, diet, bad hygiene, nor antecedent diseases, such as syphilis, yaws, or ague, can be regarded as anything more than predisposing influences, which favour its onset and development, mainly by lowering general vitality, and therefore resistance to disease.

As regards *climate*, while it is certainly most prevalent in tropical and sub-tropical countries, it frequently occurs also in cold climates, such as Norway, New Brunswick, and Iceland; in short, it may be found from the poles to the equator, and from the east to the west. Climate seems, however, to have an influence on the form of the disease, as nodular leprosy is most common in Europe, probably from the influence of cold checking the skin action, and non-nodular in warmer climates.

As for *soil*, it may occur in high or marshy lands, in town or country, by rivers or seas; and though it is true in the main that the home of leprosy is in the vicinity of water, even this must not be said without reservation.

Eating fish, especially if salt or unsound, is supposed by some high authorities to be the cause of leprosy, the idea having probably arisen from fish being a staple article of diet in tropical and sub-tropical countries where leprosy is endemic; but, since in

many countries, where, either from religious prejudices or other circumstances, no fish is eaten, yet leprosy is rife, this theory must be regarded as untenable as the sole cause, though if it should turn out, as many suppose, that an intermediary host is required before the bacillus will flourish in the human subject, it would be natural to turn to the food or the water to find the intermediary.

Propagation.—Intermarriage plays a certain part, and in some places, such as the Cape, Provence, Austria, and Galicia, leprosy is limited to certain families who intermarry.

Heredity was considered, until lately, to have an undoubted influence, but most modern authorities dispute its claim to be considered as a factor. Hansen of Norway visited the Norwegian emigrants in America, in some parts of which they form a community, and could not find a single instance of hereditary influence, and he and others account for the family prevalence from the children and parents dwelling together in close relationship and under the same circumstances; in short, they consider it is a *household*, not a *family* disease, and is propagated by contagion therefore. Heredity was never considered to be an important factor as regards numbers. D. Montgomery's cases in a leper family show the sources of fallacy in apparent heredity.

Contagion. *—The question whether leprosy is contagious or not was answered by the College of Physicians' Report of 1867, and that of the Hawaiian Government in 1886, in the negative, while the majority of the recent Leprosy Commission, while admitting that it is contagious and inoculable, consider that contagion plays a very small part in its extension. On the other hand, the Conference on Leprosy held in Berlin in October, 1897, not only agreed that it was contagious, but passed resolutions in favour of compulsory notification and isolation wherever practicable. Non-contagionists still exist, however, among many whose long practical experience in leprosy countries or their careful study of the question entitles their opinions to consideration.

* *Brit. Med. Jour.*, June 26th, 1886, May 24th, 1888, and April 19th, 1890, pp. 909 and 917. See also November 12th, 1887, an article on the "Spread of Leprosy by Contagion," with many cases, and also Besnier's pamphlet, published by Masson (Paris: 1887); also a paper by Poupinel de Valencé, "Is Leprosy Contagious?" *Lancet*, May 17th, 1890.

The circumstances that maculo-anæsthetic lepra is the prevalent form in India, and that it is most likely, mainly through pus inoculation, or by inhaling bacilli given off from leprous air passages, that the disease is propagated from one individual to another, and therefore chiefly through the nodular form, are probably reasons which have led many authorities in India (to which Vandyke Carter is a notable exception) to deny the communicability of the disease, while most West Indian authorities, with the exception of the late Beaven Rake, are in favour of its inoculability.

The invariable presence of bacilli in the tissues, and the fact that the prevalence of leprosy in Norway has been diminished 50 per cent. in twenty years* by segregation, afford a presumption in favour of the contagious theory corroborated by its spread in previously virgin countries, *e.g.*, Hawaii, British Guiana, etc.

The failure to inoculate animals is not of much weight, as the many failures to inoculate syphilis in animals testify. Moreover Vrondriansky states that if the animals are subjected to starvation, cold, etc., they may be successfully inoculated with leprosy. This requires confirmation.

The evidence grows very strong that under favourable circumstances it may be inoculable in man even by vaccination, † while coitus, ‡ prolonged contact, and even breathing in the same atmosphere for a long period, seem to have produced it in some instances.

Arning inoculated a criminal apparently successfully. Subsequently doubt was thrown upon it because it was shown that several members of his family were leprous. Hatch of Bombay reports a case of a student who cut himself whilst making a post mortem on a leper; this was followed by symptoms of

* Hansen says dropped from 2833 in 1856 to 321 in the asylums in 1895. Isolation is partially compulsory only since 1885. In June, 1902, he reckoned the number of lepers in the whole of Norway as about 400. Many dispute the efficacy of segregation.

† Also Daubler's case. See under Vaccination, Rashes, page 475. An interesting case is reported by Gairdner in *Brit. Med. Jour.*, June 11th, 1887. See also correspondence, August 20th, September 5th, November 5th, etc., by Beaven Rake, Jelly, and Hillis. Arning found bacilli in the vaccine pustule of a leper's arm.

‡ Nevertheless it is rarely transmitted from husband to wife or *vice versa*.

leprosy, the ulnar nerve being specially affected. Vandyke Carter also saw the case, and concurred in the diagnosis of leprosy; but the patient recovered apparently in about a year. Several attempts at inoculation by the skin have failed, and, as in so many admittedly contagious diseases, some other factors besides the introduction of the microbe to the man are required. All agree that the maculo-anæsthetic form is less easily communicable than the tuberculated form. According to Morrow, Jeanselme, Sticker, etc., the entrance of bacilli by the nasal passage is far more frequent than by the skin, an idea that dates back to Pliny. Sticker examined 400 lepers, 153 bacteriologically, and stated that he had discovered the primary lesion in the shape of an ulcer, rarely a nodule, on the nasal mucous membrane, usually on the cartilaginous part. Out of the 153 cases it was absent only 13 times, and bacilli were present in 128 cases. No doubt ulcers of the nose are very common in lepers, but unless they precede other manifestations their presence would be no proof that they were the initial lesions, and there are other acid-fast bacilli besides those of leprosy and tubercle. Babes goes so far as to say that the nares are more likely outlets than inlets. Schäffer says that lepers when talking loudly throw out thousands of bacilli by the nasal and buccal mucous membranes. In an advanced leper in U.C.H., after prolonged blowing on a moistened glass not a single bacillus could be found. Doubtless there are many methods by which the bacilli may be introduced, *e.g.*, by contaminated food, soil, dirty linen, etc. The mosquito as a possible bacillus carrier must also be borne in mind.

One difficulty in proving contagion is that the incubation, or at all events the latent period, is often very long, the disease sometimes not declaring itself for years * after exposure to the leprous influence, it being generally lighted up by some febrile disturbance or depressing influence. This is necessarily a great obstacle to tracing the real source of the disease in any particular case. Communicability otherwise than by inoculation is doubtless rare under ordinary conditions, and it is probable that it is so only in the same way that phthisis may be communicated by

* The longest interval I have met with is eleven years, but Hallopeau relates the case of a man in whom the symptoms first appeared thirty-two years after a fifteen months' residence in Martinique.

prolonged association in a confined space and breathing a highly contaminated atmosphere. The bad hygienic conditions in which lepers often live in most countries in which leprosy is rife are highly conducive to the spread of the most feebly contagious disease. On the other hand, improved hygiene has in many countries not only stamped out the disease but prevented its propagation, even when, as in England, many lepers are yearly introduced from without, whatever may be the mode of infection. One fact stands out clearly, that intimate association with lepers is fraught with danger. Even in India the non-contagionist commission showed that 5 per cent. of those who live intimately with lepers contract the disease, and it is calculated that if this proportion were true for the general population, there would be ten million lepers in India. Lohke of Oesel relates that a leprous woman came into a leprous free district and lived in a house with seven other sound men and women, all developed leprosy; and many similar though less strong instances could be adduced.

Pathology.—No one now disputes that the disease is due to special bacilli which lead to the formation of granulation tissue either nodular or infiltrating, and a low form of inflammation, and that for a long time the lesions are either in the skin or peripheral nerves or both, while visceral infection is a late phenomenon. In its general behaviour it resembles in some ways syphilis, and in others tuberculosis. It has, however, its own peculiarities, and the most striking of these is its extreme slowness in evolution and course.

*Anatomy.**—The pathology and anatomy of leprosy has been investigated by a host of observers, but the important discovery of the pathogenic bacillus was made by Hansen of Bergen in 1873 in unstained preparations, and soon after both he and Neisser succeeded in staining it. Both in staining reactions, appearance, and dimensions it closely resembles the tubercle bacillus, but is somewhat shorter and takes the stain rather more readily, and both bacilli are acid-fast, *i.e.*, not easily decolorised by mineral acid solutions; the substance which takes the stain in the case of the tubercle bacillus, and probably, therefore, in the lepra bacillus, being, as Bulloch and Macleod have shown, a sort of wax. The bacilli are variable: they may be straight, slightly curved, tapering at both ends or at one end only, the other being knob-like, or both ends may be thickened. Cornil

* Leloir, *Traité pratique et Théorique de la Lèpre*, 1886; Unna's *Histopathology*, 1896, p. 616; *Trans. Lepra Conference at Berlin*, 1897; Babes, *Die Lepra*, 1901.

states that they are larger in parenchymatous organs, such as the liver and testicle, than in the skin nodules. A row of minute clear rounded spaces may sometimes be seen, but whether spores or part of an involution process is a matter of dispute.

Unlike human tubercle bacilli, those of lepra are found in sections of the nodules in huge quantities, chiefly aggregated in groups, bundles, and colonies, but similar features have been observed in avian tuberculosis. So far lepra bacilli have neither been successfully cultivated outside the body* nor inoculated into animals, and even direct attempts to inoculate man—*e.g.*, Danielssen's experiments on himself—have failed. Those of Arning have already been discussed.

There has been much dispute as to the position of the bacilli, but it is now admitted that they may be either intra- or extra-cellular, but mainly extra-cellular. Unna states that the "globi" are not cells, but glæal masses, which Pernet suggests are a resting-stage of the parasite. The bacilli have been found in all the viscera of the body, as well as in the nerves and nerve centres, the bones and bone marrow, but they are especially plentiful in the skin nodules and mucous membranes and their ulcers, the spleen, liver, and testicles, while in the lungs both tubercle and lepra bacilli are often found together, lepers being frequent victims to phthisis.

They are said not to be found in bullæ or blister contents, except when they are over nodules or infiltrated skin, but they have been found in vaccination vesicles of nodular lepers by Auché and Carrière, Arning and Simpson. While bacilli may perish in the tissues in the course of time, and apparent cures result, Hansen does not believe in their stability, and thinks there always remain some foci of latent bacilli, which are liable to become active under circumstances favourable for their development.

Histologically, a leprous nodule is an infective granuloma produced by the bacillus either in the derm or hypoderm, separated by a narrow zone from the epidermis. The bacilli are abundant in the fat, but not in the sebaceous glands; but while they may be found in the hair follicles, it is disputed as to whether they are in the sweat coils. In addition to the bacilli the nodule is composed of lymphocytes, plasma and mast-cells, large flat giant cells, vacuolated cells, and the cells of Langhans, but Hansen and Looft think that the last were really in tuberculous, not leprous, growths.

The bacilli infect the vessels, especially the endothelia, so that even thrombosis may be produced. The sweat coils are sometimes infiltrated with cells, in other cases destroyed. The epidermis is unaffected. The granulomatous structure may be in the form of infiltration instead of nodule, but histologically the neoplasm is the same, commencing round the vessels and glandular structures. The macular eruption of nerve leprosy, **Neuro-leprides** of Unna, are not the same as the above. Some observers say there are no bacilli in them, others admit that there are a few, but in a case of Abraham's with rings, Pernet† found abundance of bacilli. At all events they are only indirectly through the nerve lesions the product of leprosy, and they may arrest the bacilli in the blood stream, but these tend

* The claims of Campana and other workers that they have cultivated the bacillus are not accepted.

† *Brit. Jour. Derm.*, vol. xii. (1900), p. 450.

to disappear in the older macules; according to Unna, there are older forms of embolic neuro-leprides, which show a transition to subcutaneous and cutaneous nodules.

The mucous membranes are affected in the same way as the skin, and bacilli are present in large numbers, the tongue, epiglottis, larynx, and nares being most affected.

In the enlarged nerves, especially the ulnar and peroneal, bacilli are abundant, and can best be found in longitudinal sections. The changes are both parenchymatous and interstitial, but it is disputed as to whether the bacilli are intra- or extra-cellular, probably they are both.

The viscera most affected are the liver and spleen, which are enlarged and contain vast numbers of bacilli. Amyloid changes are often present in these organs and in the kidneys, and large white and granular kidneys are common, but nodules are rare, though bacilli may be found. When the lungs are affected by leprosy alone a slow sclerosis is said to occur and no caseation; but tubercle bacilli are often conjoined towards the end, and then caseation and other tuberculous changes occur.

There are no distinctive changes in the nervous system, but degeneration of the cutaneous filaments of the peripheral nerves is common.

The eye changes are all due to the bacilli, which have been found in numerous colonies when they were absent in other parts of the body (Lie).

Diagnosis.—No mistake in any of the forms can well arise when the disease is fully developed. The early symptoms of the nodular forms may be mistaken for acute rheumatism, for beriberi, and for ague, and when the patient is in a malarial district, the diagnosis may be very difficult, but if he is in a leprosy district, the extreme drowsiness, the vertigo along with epistaxis, should lead to a suspicion of the state of things, especially if he has associated with other lepers.

Difficulties arise from the disease developing sometimes insidiously, without any prodromal symptoms, the skin manifestations being the first signs. These, moreover, may be very limited in extent, slow in evolution, perhaps a single nodule or patch of infiltration, without any apparent cause remaining with very little change for weeks or months, and there may or may not be loss of sensibility, although in the majority there is some sensory disturbance which may need careful investigation for its detection. In doubtful cases, the bacilli should be looked for, though it must be admitted that in some cases indisputable on clinical grounds very good observers have sometimes failed to find the bacillus, but the mode of investigation is of the highest importance.

The early eruption of leprosy may resemble some cases of

erythema exsudativum, but the absence of hyperæsthesia or anæsthesia in the latter, and the febrile symptoms being only slight or absent, are distinguishing features. Moreover, erythema papules are, as a rule, not so large, and when they spread, clear up in the centre; on the other hand, leprous erythema may form in rings from the first, but they do not spread at the margin and involute in the centre, but remain unchanged for some days or weeks; the ring is broad in comparison to the clear centre, the colour is a deep crimson-lake hue.

They are less often seen on the face than lepra spots, and the whole disease runs a more acute course, leaving at the most transitory, bruise-like stains, while the eruption of lepra is very persistent, fading to orange-coloured spots, remaining slightly elevated and lasting for months.

In *syphilitic roseola*, the patches are small, not over three-quarters of an inch in diameter, very little raised, and the other symptoms of syphilis would certainly be present.

The nodules may resemble those of *syphilis*, and on the whole that is the disease for which leprosy is most likely to be mistaken before the symptoms are fully developed.

Leprous nodules have their special seat of predilection; those of syphilis are indiscriminate, and may come where leprous nodules never, or rarely, appear. Moreover, the nodules of syphilis are not grouped, have a characteristically depressed centre after a time, and run a more acute course, whether they become absorbed or break down. I have twice seen leprosy and syphilis combined; the presence of anæsthesia helped to distinguish in one case, while in the other the facial aspect of lepra was characteristic. Some sensory disturbance is usually present.

From *lupus vulgaris* nodules, those of leprosy are distinguished by being symmetrically disposed to some extent and by their being more persistent.

In mixed lepra, if ulceration of the palate and destruction of nasal cartilages were present, *syphilis* would be suggested; but by this time anæsthesia would have set in, which would practically exclude syphilis, and then further investigation would reveal that the patient had other symptoms of leprosy.

The maculo-anæsthetic form has been mistaken for syringomyelia; but though the sensory symptoms of the presence of

tactile sensibility and the absence of sensibility to pain, heat, and cold were similar, the patient had paralysis of the orbicularis palpebrarum, thickening of the ulnar nerves, and had lived in Tonkin. Characteristic skin lesions, too, are rarely absent. Great care is required, in rare instances, when the nerve symptoms are unilateral. See also Morvan's Disease.

Although the symptoms of syringomyelia and its variant, Morvan's disease, may be observed in a few cases of leprosy, Zambaco's views that they are merely atavistic forms of leprosy justly meet with scant acceptance, and are further discounted from his saying the same of ainhum, diffuse and circumscribed sclerodermia, progressive muscular atrophy, and Raynaud's disease.

Prognosis.—The disease is almost invariably fatal, and even though existence is prolonged for many years, it is at best a miserable one.

Recovery occasionally takes place in temperate climates, both in the nodular and maculo-anæsthetic form; but the chance is better for the nerve form, though there is more or less permanent disablement.

The duration varies greatly, according to the form of the leprosy; the nodular is soonest fatal, the mixed next, and the maculo-anæsthetic least. The average duration of the first is eight years, of the second ten years, and of the third fifteen. Mental depression, and the patient being young, are unfavourable circumstances in all forms.

A well-developed case of nodular leprosy of three years' standing left the West Indies and came under my care in 1888. He improved considerably up to 1897, when he began to have irido-cyclitis, this led to blindness in two years; in 1898 nodulation and infiltration of the face, which had cleared up, began to recur, and at the end of 1899 was very marked; even then he said in his general health he never felt better in his life, and it had not failed in August, 1902. For the first five years from 1888 he had no febrile exacerbations, the first one being determined by a tuberculin injection of minimal quantity.

In nodular lepra, unfavourable symptoms are the febrile exacerbations being frequent, the air passages being involved, and the internal organs extensively implicated, in which case, the febrile symptoms are more severe and the urea excretion greater,

while extensive ulceration and the supervention of lardaceous disease are signs of especially bad import.

Favourable elements are : the patient coming under treatment early, removal to a temperate climate, the absence of serious complications, the nodules shrinking, and the febrile exacerbations occurring at long intervals. Diffuse infiltration is better than many nodules, the progress being slower, the fever lower, and the case more amenable to treatment. In maculo-anæsthetic lepra, the disease is almost as certainly fatal in the long run, but the end is much further off, and if seen early, or the nerve implication is not extensive, and there are no serious complications, the disease * may be arrested, and even improvement in the sensory symptoms, with return of sweat secretion, be obtained ; eventually, however, the eruption spreads, the bones disintegrate and lead to mutilations, with all the other troubles, already described.

In the mixed form, the patient is liable to the accidents of both forms, but, on the whole, the disease is rather slower than the purely nodular cases in its progress, but ulceration of the soft palate is especially liable to occur in this form, and add to the other troubles.

Treatment.—This, unfortunately, has hitherto only been palliative or preventive, the number of so-called specifics bearing testimony to the incurability of the disease. Evidence is, however, accumulating that we may hope for better results in the future, and even now in temperate climates the duration of the disease may be considerably extended beyond previous averages.

Most authorities recommend a change to a temperate climate, and certainly patients should be removed from districts where the disease is endemic. There can be but little doubt, however, that cold and variable climates have an unfavourable influence, by increasing the liability to chills.

When the febrile exacerbation is present, full doses of quinine should be given, five grains of the sulphate or hydrochlorate every four hours combined with an effervescing potash mixture. The strength should be carefully supported by highly nourishing diet, and hot baths are especially useful. Iodide of potassium is

* Mr. Hutchinson showed a case at the International Congress of 1881 of a woman who had had this form of leprosy thirty years before, and was quite well except that she had still paralysis of the arms and anæsthesia. He says that many of these cured cases end in tuberculosis.

contraindicated at this stage; according to Wolff, it makes the fever violent, the nodules ulcerate, and fresh nodules appear with presence of bacilli in the blood. In one case within my knowledge it produced purpura. Cod-liver oil, after the febrile symptoms have subsided, is beneficial. It is an exploded error that there is any disadvantage in healing the sores as soon as possible, and they should be treated on general antiseptic principles; iodoform and wet boracic acid lint, *e.g.*, are good applications, but when very extensive, finely carded oakum over a simple dressing is cheap and efficient, and prevents the fœtor which too often poisons the air of asylums (Hillis).

Arning recommended salicylate of soda from seven to fifteen grains three times a day. I have given it in two cases during periods of inactivity, but was unable to observe benefit from it, but it may be more useful in the more active disease of tropical climates or in the febrile exacerbation stage; and indeed, Barnes, of the British Guiana Leper Asylum, says it acts like a charm in leprotic fever. Its analogue, salicin, might be substituted at this stage, as it can be taken in twenty or thirty grain doses or more, and seldom upsets the patient. Leitz has also recommended the administration of salol.

Of the many older so-called specifics recommended, only two* have to some extent stood the test of long experience,—Chaulmoogra oil, and Gurjun oil from *dipterocarpus lævis*. These oils are taken internally and rubbed in externally; both are very nauseous, and are best given in emulsion or capsules, beginning with small doses. The Chaulmoogra oil should be begun in doses of three minims, or one capsule, three times a day after meals, and gradually increased up to the limits of the patient's endurance, experience having shown that the result is far more satisfactory when large quantities, such as one hundred drops or more a day, can be taken, but it is seldom that more than a drachm a day, and often less, can be tolerated, nausea, vomiting, and diarrhœa ensuing, if the limit of the individual is exceeded. According to Oro Mario, the number of bacilli diminish under

* "Kauti" was a celebrated secret cure by a Hindoo named Bhau Daji. It is an oil derived from a plant which he pointed out to a relative of Mr. Stanley Boyd, who informs me that its name is known as *hydnocarpus imbricans*. It somewhat resembles Chaulmoogra oil, which Desprez and Prain state is also from a *hydnocarpus*.

its use. Gynocardic acid has been recommended in doses beginning at half a grain, and gradually increasing it up to forty-five grains three times a day. The oil also should be well rubbed in, in the form of an ointment, consisting of equal parts of the oil and lard; the friction should be thorough and prolonged, where possible for two hours a day, previously cleaning off the old oil with fuller's earth, or by the aid of a warm bath. I have seen one case of the mixed form in a man, æt. thirty-five, in which a perfect cure resulted apparently from taking Chaulmoogra oil in enormous doses. The disease was contracted in Paraguay, had existed five years, and was at its worst one and a half years previously. He began with small doses of Chaulmoogra oil, but could not tolerate much until he went up into the mountains. There he reached two hundred minims of oil per diem, and immediately began to improve; ultimately, he reached five hundred in a day, and all symptoms absolutely disappeared except small areas of anæsthesia on the upper and lower limbs.

Tourtoulis Bey* injected Chaulmoogra oil subcutaneously, five grammes a day. There was marked improvement after fifty injections. Subsequently the patient underwent five hundred and eighty-four injections, spread over six years, and was considered to be cured. On the other hand, Miquel says that the injections are painful, and sometimes provoke local reaction, and Du Castel and Hallopeau say it may produce fat embolisms, so it must not be used indiscriminately, but all agree that the leprous manifestations improved under it.

Strychnia or nux vomica may be advantageously combined with Chaulmoogra, and assists in enabling the patient to tolerate it. Piffard and others have a high opinion of strychnia by itself as a remedy. When Gurjun oil is employed—and it is spoken of most highly by those who have used it in the tropics—it is given internally, in an emulsion consisting of lime-water three parts and Gurjun oil one part, half an ounce being given twice a day; at the same time, a liniment of equal parts of the oil and lime-water is rubbed in, in the same way as the Chaulmoogra. I have found that, in this climate, the emulsion cannot be made by this formula, the oil being too solid. For the mixture it was found best to rub it up with powdered gum arabic and water; but English patients.

* Abs. *Brit. Med. Jour. Supp.*, November 11th, 1899.

could not take more than a drachm a day, and that only by raising it very gradually from a five-minim dose. The liniment can be made with olive oil instead of lime-water. In the writer's hands, the Chaulmoogra oil appeared to be more useful than Gurjun, but in the tropics, Gurjun is more valued. I have found simple oils quite as useful for a liniment, and greasy applications always seem grateful to the leper. Besides direct medication, frequent baths, especially Turkish, are to be used, and strict attention to general hygiene should be paid. A very liberal dietary should be ordered, and Hutchinson advises a good allowance of a generous wine. Sulphur baths are strongly recommended by some, and since scabies is a very common complication in the tropics, it has a double advantage. The patient should be well and suitably clad according to the climate, and chills carefully avoided, as they frequently seem to determine a fresh exacerbation. Other remedies have had advocates lately. Unna claims to have cured a case with sulpho-ichthyolate of soda or ammonium, combined with the use of external reducing agents. The soda salt has entirely failed in my hands in two cases. In a boy of ten, in an early stage, five-grain doses produced anorexia, nausea, and vomiting, and an older nodulated case could not get beyond eight grains three times a day. There was no improvement in the leprosy symptoms.

Tuberculin excited great hopes for a time, on account of the marked reactions produced by it in lepers; subsequent experience has shown that it is not only not of permanent benefit, but that it is dangerous,* as it sets free the bacilli instead of destroying them. In a nodulated case under me, which had been free from febrile attacks for three years, two milligrammes excited an attack of leprosy fever of a remittent type which lasted three weeks, and a copious outbreak of fresh nodules ensued. They disappeared again with frictions of Gurjun oil liniment, and ultimately he was no worse, perhaps had a little less infiltration, but it was too dangerous an experiment to repeat.

Coley's Fluid (the toxins of erysipelas and bacillus prodigiosus) has also been given by injection with no good effect.

Carrasquilla of Bogota claimed to have had good results by injecting serum from a horse into which serum from leprosy blood had been injected. The results have been disappointing

* See a summary of the effects of tuberculin in leprosy in a leader in the *Lancet*, April 16th, 1892.

in the hands of others, there having been only transitory improvement, and even this has been ascribed to the reaction which can be obtained from products obtainable from normal serum. This, Kermogant points out, produces temporary involution of some malignant growths. There is no doubt, however, that in some cases diminution of the infiltration has occurred from the so-called leprous serum—*e.g.*, Buzzi's case—but it has not lasted and the injections are not free from danger.

Mercurial Injections. In the *Lancet* of August 8th, 1896, I published the results of *intramuscular* injections of perchloride of mercury,* one quarter of a grain in twenty minims being injected into the buttock once or twice a week. The effect was most striking in removing the infiltration and improving the general state of the patient in the case related. The injections were continued for over two years once a week without any salivation or ill-effects, and three years after the commencement of the treatment the improvement was maintained. Other cases similarly treated have improved almost as much, but in some of them there has been a recurrence of nodules some months after discontinuing the treatment. The perchloride gives pain at the time of injection and leaves an induration, at first tender, for some time afterwards; latterly, therefore, I have used the sozoiodolate of mercury in the same dose, dissolved by adding an equal weight of iodide of sodium. This solution is not nearly so painful either at the time or afterwards. It is important to plunge the needle well into the buttock, as subcutaneous injections are much more painful and liable to produce sloughing. At first I was in hopes that the mercury acted by destroying the bacilli, but the recurrence of nodules in quite new situations suggests that the infiltration is merely absorbed, and that some at least of the bacilli get free. It ought to be possible to attack some of these free bacilli either by salicin, which breaks up into salicylic and carbolic acids in the blood, or by the simultaneous administration of Chaulmoogra oil. Latterly, also, I have thought there was some advantage in carrying on the injections for three months, then waiting three months and resuming injections. As in syphilis, it may take a long

* Haslund of Copenhagen has also used independently these injections with benefit.

time to discover the best method of getting permanent results by these injections, and in that disease also cure cannot be promised by specifics, though their good effect is undeniable. Administration of mercury by the mouth does not produce equivalent effects ; at all events, no other known treatment produces such rapid improvement in the appearance and general well-being of the patient, and it does not interfere with any other measures deemed advisable for his welfare. As might be anticipated, the results are not so striking in the nerve form, though improvement does result if the cases are of not too long standing. The leprotic eye affections have not been influenced by it in three cases in which I have tried it, even while other lesions were improved. Since the above was written I have had two cases in which the disease is apparently kept in abeyance by intermittent injections ; and the treatment has been found advantageous by other observers, especially Neish of Jamaica and Lie, while others have failed to get any good results.

Locally.—Friction with Chaulmoogra, Gurjun, or even olive oil, is always a useful measure, and appears to facilitate the absorption of nodules. Unna claims to get good results by inunction of chrysarobin and ichthyol eight parts, salicylic acid two parts, vaseline one hundred parts, using pyrogallic acid instead of chrysarobin on the face. With this and ichthyol internally he claimed to have cured a case, but the patient died in a miserable condition a year later in Brazil. The fact is, friction with any greasy substance may produce temporary improvement. De Brun of Beyrout produced marked improvement with ichthyol internally for some months, the quantity reached ten grammes a day. In the anæsthetic form nerve-stretching and nerve-splitting have been found useful in restoring sensibility, muscular power, and healing ulcers, and some permanent improvement, also relief from the shooting pains so common in this form. Antipyrin gr. v. and phenacetin internally are worth trying for the shooting pains. Perforating ulcers from lepra can be treated as successfully as from other causes. (*Vide* separate article, p. 651.)

As *preventive* measures, segregation is the only effective plan, and it is probable that the disease was stamped out of England and the greater part of Europe by this means, and great diminution in the number of lepers has ensued in Norway since its

adoption. Kanthack, Collins, etc., dispute this, and ascribe it to improved hygiene, generally, asserting that diminution of leprosy in Norway began before measures of segregation were adopted, and that segregation was not strictly carried out in that country. The undoubted fact that people who have prolonged intimacy with lepers are exceedingly likely to contract the disease is much in favour of segregation, and the balance of evidence and opinion of the highest authorities is in favour of it. Hansen, who has had the best opportunities for investigating the subject, is a convinced contagionist and advocate for segregation. Those who have to dress the sores of lepers should be very careful if they have scratches or abrasions, and not neglect carbolic acid or corrosive sublimate ablutions afterwards.

RHINOSCLEROMA.*

Definition.—A granulation new growth of almost stony hardness, affecting the anterior nares and adjacent parts.

This disease was first described by Hebra and Kaposi in 1870 from seven cases, and their account was extended by the experience of other cases in their classical work, from which the following account is taken, there having been only three instances† in England out of about two hundred known cases.

* *Literature.*—Hebra's *Skin Diseases*, vol. iv., p. 1. Monograph by Celso Pellizzari (Florence: 1883). Good analysis in *Ann. de Derm. et de Syph.*, vol. iv. (1883), p. 549; in volume for 1890, p. 173, is a full analysis of a good paper by Wolkowitsch. A paper by A. Castex, in *Jour. Malad. Cutanées*, vol. iv. (1892), p. 161, gives a *résumé* and bibliography to date. Ducrey, 1893, has complete illustrated monograph on four Italian cases. Abs. in *Annales de Derm.*, vol. v. (1894), p. 131. Kaposi's Hand Atlas, plates cclxxxix. and ccxc., *et seq.*

† Semon's and Payne's case, a South American Spaniard, *Path. Trans.*, vol. xxxvi., 1885, coloured plates and histology. This is the same case which had been in Paris, and was histologically examined by Cornil, *Prog. Méd.*, tom. xi. (1883), p. 587. I saw this case both at St. Thomas's Hospital and at the Pathological Society. He was a native of Guatemala, æt. eighteen, and the disease had been present four years. Morell Mackenzie, in *Brit. Med. Jour.* for March 21st, 1885, gave a further account of this case, and in his work on *Diseases of the Throat and Nose* he gives a summary from forty cases. W. Anderson showed a case of a boy, æt. thirteen, at the Dermatological Society in 1890. It had recurred five years after removal. The boy was born in England, but looked as if he were of foreign extraction.

(Up to 1895 Kaposi had seen fifty cases.) The disease occurs chiefly in the Austrian Empire and South-west Russia. A few other cases have been observed in Italy, Spain, Switzerland, Belgium, and Sweden, at San Salvador, and other parts of Central America, in Brazil, where it is said to be not very rare, and a case from Egypt has been reported by S. Davies. Vidal had a case from Buenos Ayres, and Besnier's and the other Parisian cases were also foreigners. Kiegan relates four cases in Hindoos in the Indore Hospital. Indigenous North American cases have been reported by Bulkley, Jackson, Klotz, Wende,* etc.

Symptoms.—The disease generally commences in the mucous membrane of the anterior nares and the adjoining skin. Wolkowitsch analysed 85 cases, and found the regions attacked were, —nasal fossæ, 81 ; exterior of nose, 74 ; pharynx, 57 ; upper lip, 46 ; larynx, 19 ; palatine arch and velum, 17 ; upper alveolar border, 16 ; trachea, 5 ; lachrymal sac, 5 ; tongue, 4 ; lower lip, 2 ; ear, 1. Pick and Kaposi have also observed it in the auditory canals.

The lesions consist of flattish, isolated, or coalescent nodules or raised plaques, imbedded in the cutis vera, or deeper layers of the mucous membrane, and sharply defined from the normal skin. The growth is peculiarly hard to the touch, though not entirely devoid of elasticity, smooth, glossy, and either of normal colour veined with dilated vessels, or of a uniformly bright or dark brownish-red colour, quite devoid of hair or glands. The epidermis covering it is tense and easily cracked, forming rhagades at the natural folds, and from these exude a viscid secretion, which dries into yellowish adherent scabs. It is not spontaneously painful, but aches severely after firm pressure.

It commences quite painlessly, as a simple induration, on the inside of the alæ nasi, the mucous membrane of the septum or from the upper lip, grows slowly, but with a tendency to spread, but never to spontaneous involution, and it may last for years without any change except superficial excoriation. At a late stage a viscid exudation occurs, and dries into a yellow crust. If any attempt at removal is made, it recurs comparatively rapidly, but is always a purely local disease, not affecting the health in

* Jackson, *Amer. Jour. Cut. Dis.*, vol. xi. (1893), p. 381, with good coloured plate. Wende, *loc. cit.*, vol. xiv. (1896), p. 90, was a native born American boy. Jackson's was a Hungarian woman. Klotz's a German woman, who always responded to specific treatment.

any way except from its mechanical obstruction of the nostrils, which may be quite occluded when it is fully developed, and dangerous symptoms may arise from obstruction of the pharynx or larynx. At the same time, it widens and flattens the nose, making the front part very tense and hard, while it may gradually implicate the whole thickness of the upper lip; and in Salzer's case spread even to the periosteum and bone itself of the superior maxilla.

Variations.—In one case, it began on the velum and hard palate, in another as a hard polypoid tumour from the mucous membrane of the nose. There is also, often, absorption of the septum nasi from pressure, once perforation of the hard palate, but not from tumour, and once perforation of the skull into the brain (Kaposi); there has also been cicatricial-like sclerosis, but with very little tendency to tumour formation, in the pharynx, palate, and other parts. It is said never to break down except from injudicious treatment, but Zeissl's* case did; superficial ulceration when it is in mucous membranes may occur. Intercurrent erysipelas and threatened suffocation are the chief dangers, otherwise the disease may go on for fifteen or twenty years, and a case lasting twenty-seven years is on record. Lubliner records a case of spontaneous disappearance after typhus, and Lutz a doubtful one after typhoid. Klotz's case was improved for some months by scarlatina.

Etiology.—Both sexes are almost equally liable, and the ages hitherto have been from nine to forty. In Robertson's cases, two sisters were attacked. The subjects are from the very poor, but are in good health. Beyond this nothing is known as to causation, but its narrow geographical limits suggest some kind of endemic influence.

Pathology.—On the whole these investigators regard the infiltration as *sui generis*, whose nearest relations are with granulation tumours, such as are seen in lupus, tubercle, syphilis, and leprosy. Noyes and Unna are inclined to the view that the growth is an inflammatory product consequent on the blocking of the lymphatics by the bacilli.

Anatomy.—The anatomy has been investigated by Kaposi, Mikulicz, Cornil, Payne, Róna, Marschalko, and others, with general agreement. The

* Zeissl's *Syphilis*, plate xxiv. Lang had a case which simulated an ulcerating carcinoma.

chief change is in the corium, in which the papillæ are elongated, and there is a dense granulation-like cell infiltration, with, in some parts, epithelial cells also, but not true giant cells, though Cornil describes large round cells with one or several nuclei; these are the same as described by Mibelli, confirmed by Noyes, and are of two kinds—so-called hyaline and colloid cells. The latter, Noyes traced in various stages from infiltration round cells; bacilli in preponderating numbers are found in both kinds, but most in the watery cells from which the colloid cells are derived. Mibelli, however, ascribes these cells not to degeneration of the cell, but that their protoplasm has been replaced by the glœa of the rhinoscleroma bacillus. Pawlowsky takes the same view. There is not much stroma as a rule, but in parts there is very dense fibrous tissue. The epidermis is generally not much altered, but Payne and Mikulicz describe considerable branched downgrowth of the interpapillary processes, and Payne also found in the epidermis, nests very like those of epithelioma, but containing an imprisoned hair. Frisch, confirmed by Cornil and Alvarez, Paltauf, Payne, etc., found characteristic,* bacilli, short, thick, ovoid, and capsulated, and staining only at the ends; these occur either in free groups or in cells, in places where the epithelioid cells are most abundant. They closely resemble the pneumo-cocci of Friedländer, but are considered to be quite distinct by Dittrich, Cornil, Alvarez, Rydygier, Ducrey, Paltauf, etc., while others consider them identical. Friedländer's bacillus produces more rapid fermentation in a 1 per cent. solution of grape sugar, will grow in an acid medium, and will coagulate milk—all points of difference from Frisch's bacilli.

Some recent observers, such as Secchi and Ducrey, do not consider that the bacilli of Frisch are the pathogenetic agents, while Róna and Marschalko do think so. The latter has made very careful observations, and concludes that the hyaline and colloid cells are degenerated plasma cells, and are not specific to rhinoscleroma, as hitherto supposed, and are met with in other processes; but a large proportion of plasma cells are transformed into rhinoscleroma tissue by regressive degeneration. The only specific elements besides the bacilli are the cells of Mikulicz, which are connective tissue cells degenerated by the action of the bacilli, of which they contain enormous numbers in glœæ. The cells increase in size to bursting point and then scatter the bacilli through the tissues. The cells then perish, and are replaced by the hard collagenous tissue characteristic of the disease.

Diagnosis.—The stony hardness, slow painless growth without disintegration, and its predilection for the anterior nares, are pretty characteristic from the dermatologist's point of view, and

* They are best demonstrated by prolonged staining (twenty-four hours or more) with 5 per cent. solution of methyl or gentian violet in saturated aniline water, and decolorisation with Gram's iodine solution. Mibelli prefers Grenacher's alum carmine. The sections are placed in a 4 per cent. solution in hot water, and allowed to remain an hour or more—twenty-four hours are not injurious. They are then washed in water, treated with alcohol in the usual way, and mounted in dammar. The bacilli could be easily found in infiltration cells, but only in those which had undergone some change. Their size is 2 to 2.5 μ long and .5 μ thick, usually grouped.

when it commences in the pharynx or larynx the case is not likely to come to him. In some of these respects, it is imitated by syphilitic nodules, keloid, and epithelioma.

Syphilitic infiltration offers trouble only at first, as it soon shows signs of disintegration, and any doubt would be resolved by the administration of specifics, in most cases, though in some, such as one of Hebra's and that of Klotz, temporary improvement occurred under mercury.

Keloid, with dilated vessels over it, would be very like, but is rarely met with about the nose; a history of a previous scar would help, but microscopic investigations of an excised portion might be necessary for certainty.

Epithelioma is extremely rare on the upper lip, and being on the border of the mucous membrane and the skin would ulcerate comparatively early; before this the pearly, vesicular-looking nodules on the border of an epithelioma, would assist to a right conclusion. Some sarcomas are very like it at first until they begin to break down.

Treatment.—Permanent removal has never yet been accomplished, the disease 'speedily recurring after excision, probably because it is seldom seen early enough to be able to get beyond the disease. It is remarkable, that it does not cut nearly so hard as it feels to the touch. Attempts to keep the nostrils permeable have been made by boring through the growth with caustic potash, or removal with the sharp spoon, but only temporary relief has been afforded, though the perforations may be kept open by antiseptic tampons. As the patients live long with comparatively little discomfort, it is probably better to leave them alone, as far as operative interference is concerned, except that sounds may have to be used to keep open the air passage in the larynx. In one case, Lang obtained promising results with a salicylic acid treatment, inside and out, as follows:—A 1 per cent. solution of salicylic acid was injected into the sclerosed parts once a day, later a 2 per cent. salicylate of soda solution was used. Metallic tubes covered with salicylic acid plaster were introduced into the nostrils. Naso-pharyngeal douches of salicylate of soda were employed, an alcoholic solution of the acid applied, where the mucous membranes were affected, and salicylic acid snuff ordered; in fact, salicylic applications in every conceivable way; and internally, ten grains of the salicylate three times a day

for two months. One and 2 per cent. solutions of carbolic acid were also used. Very great improvement ensued in all parts, the infiltration became softer and less conspicuous, and the patient was improving in every way, but he had to leave the hospital before he was quite cured. This treatment, therefore, deserves further trial. Corrosive sublimate or thiosinamin injections might be tried. Stoukovenkoff had fairly good results by injecting a from 1 to 12 per cent. solution of liquor Fowleri, which arrested the progress of the diseases, and at the end of fifteen months (222 injections) the growth seemed to be disappearing. Arsenical injections are very painful. Vymola treated a case with success at Houl's suggestion, with rhinoscleroma toxin. There was a slight rise of temperature; the dose began at 1cc. and was increased to 6cc. In three months the thickening and infiltration had subsided.

EMBRYOGENIC GROWTHS.

Synonym.—Nævi.

Most continental authorities employ the term "nævi" for all forms of neoplasm of congenital origin which are present at birth, and many use it also for growths which, although due to developmental errors, may not have appeared for months or years after birth. Custom in England restricts nævi unless a qualifying term is added to blood-vascular growths. To avoid ambiguity, and since in its strict meaning a nævus should be present at birth, I here employ the term "embryogenic" for all neoplasms, which there are strong grounds for believing derive their origin from defects arising in foetal life.

These are :—Some keloid fibroma, neuro-fibroma and neuroma, myoma, nævus pigmentosus, nævus vascularis, angioma serpiginosum, lymphangiectodes, lymphangioma tuberosum multiplex, epithelioma adenoides cysticum, adenoma sebaceum.

While the clinical differences of most of these growths generally enable them to be readily diagnosed, in some, the nature of the growth can only be determined with the aid of the microscope.

KELOID.

Deriv.— $\chi\eta\lambda\acute{\eta}$, a claw.

Synonyms.—Cheloid ; Alibert's keloid.

Definition.—A fibro-cellular, corium new growth, occurring after injuries to the cutis, and perhaps spontaneously.

This disease has no relation to Addison's keloid or morphœa. The so-called true keloid is a very rare disease, one in two thousand according to Hebra and McCall Anderson, though some authors give a higher proportion.

From the time of Alibert, who first clearly described this disease, onwards, authors have spoken of a true and false, or spontaneous* and scar keloid,† while Dieberg has added the hypertrophic scar, Hawkins the verrucose cicatricial tumour, and Wilkes the syphilitic keloid. The first two are of the most practical importance, and even between these, as will be shown in the etiology and pathology, the distinction is probably more artificial than real, and is only provisionally retained here, for convenience of description.

Symptoms.—The typical keloid not obviously of scar origin is often single, and its most common position is on the trunk, especially on the chest over the sternum (half of all cases), where it forms a firmly elastic tumour of cicatricial aspect, sharply defined, springing up abruptly from the healthy skin, and projecting from one-sixteenth to a quarter of an inch or more ; its shape is very variable, oval or disc-like, cylindrical or rod-like, and occasionally nodular, often rather narrow in the middle in the rod-shaped, and slightly depressed in the centre in the disc form, which may be pedunculated ; and the frequency with which it sends out claw-like processes,‡ mainly at each end, gained it its appellation. The surface is smooth, the

* Alibert's Atlas, plates xxviii. and xxix., in the first edition, where it is called cancroide. The term cheloid is used for the same lesion, in the second edition.

† Author's Atlas, plate lxxii. Hebra, *Lief* x., plate v., figs. 1 and 2. Hutchinson's *Illustration of Clinical Surgery*, several plates. Morrow's Atlas, plate lxiii., fig 1, in negro.

‡ Unna explains that this is due to extension taking place in the course of the larger vessels, *Histology*, p. 841 ; and Wilson pointed out that they form to join the outlying nodules to the main body.

epidermis tense, unless involution is occurring, and the colour is white and shining, or pinkish or purplish from dilated vessels coursing over it. It is generally tender, and sometimes spontaneously painful, the patient complaining of pricking, burning, or itching, which is occasionally severe; on the other hand, all these symptoms are often absent, and the claim to distinguish true from false keloid by their presence cannot be maintained.

After attaining a certain size, the tumour may remain stationary for an indefinite time, or progress very slowly, *e.g.*, Callender's case was observed for ten years, during which period it gradually enlarged, while Duckworth's case existed forty years, attaining to the size of a horse bean in sixteen years, while twenty years later it was two and a quarter by one and three-quarter inches. In a case of my own, a gentleman, *æt.* sixty-seven, who had numerous large scar keloids on the trunk and limbs, they dated from boyhood, fifty-three years before, coming on after boils, and some of them had grown very large, and were still enlarging. They itched and pricked at times, especially after alcohol. (*Vide* my Atlas.)

Keloids may undergo involution, either partial or complete. Three of the tumours in the case just mentioned had disappeared completely, leaving the skin which contained them as a loose sac, and I have seen three instances of small scar keloids, which developed and declined under observation, taking three years in a syphilitic keloid in a young man, while in a woman of forty-five a keloid following injury had not quite gone in four years. On the other hand, in Goodhart's case, which followed small-pox scars, and was well-nigh universal, large tumours involuted completely in a few months. Many other cases are on record, and Hutchinson thinks that involution is the rule in the keloid of young people, while in other subjects, its disappearance is slow, or does not occur at all. In Erasmus Wilson's case, the tumour varied in size according to the patient's health.

Variations.—The less common positions for supposed spontaneous keloid are the face, ears (especially the concha and lobule, symmetrical when due to earrings), both surfaces of the extremities, the back of the hand and foot, the external genitals, and in Mingès's case it occurred in the urethra. When multiple—and they may be numerous* if they are on the chest—Kaposi

* De Amicis's case, *Comptes Rendus*, Derm. Cong., Paris, 1889, with three

says that they are arranged in rows parallel to the ribs; but this is certainly not always the case. In de Amicis's case, a woman, æt. twenty-seven, there were 318, most of them spontaneous, and arranged with very exact symmetry. They were hemispherical, from a pin's head to a pea in size. When small, they may be imbedded in the skin, and only perceptible to the touch. In Reiss's case, a girl of twelve, there were 210, symmetrical on the whole, but not in lines. There was no antecedent eruption. The de Amicis, Cazenave, Schwimmer, Kaposi, and Reiss cases form a special group, and are perhaps of congenital or nævoid origin, though late in development, and have more claim to be called "spontaneous" than any other form.

Keloids rarely ulcerate or take on a malignant character, but a case in which both these complications occurred is recorded by W. Anderson.* On the other hand, epithelioma in hypertrophic scar tissue is not so rare, especially if subjected to repeated irritation. (See Epithelioma.)

Scar Keloids, of course, come anywhere, and, when due to the scars of an eruption like acne or small-pox, in any numbers, and do not differ in any other particulars, except their origin, from the spontaneous form. They spring from the scar, but are not always limited to it, often spreading slowly, like the others; on the other hand, the **hypertrophic scar** never spreads beyond the limit of the scar, and is simply a thickened cicatrix. Keloid is said to be particularly frequent in syphilitic scars, to be softer and more likely to involute in them than in others, but this is not established as a general rule. Verneuil, however, relates that in a case of syphilis, where keloids covered the whole body, they all disappeared under iodide of potassium. It would be easy, however, to show, from my own and general experience, that iodides do not usually make much impression on keloids in syphilitics. Bryant says that it is pigmented, but this is not especially frequent in my experience,

coloured plates, p. 93; and Vidal, p. 103. In a case of Schwimmer's, p. 568 of Ziemssen's *Handbook*, there were 105:—Original communication in *Viertelj. f. Derm. u. Syph.*, 1890, p. 225. W. Reiss, *Archiv f. Derm. u. Syph.*, vol. lvi. (1901), p. 323, with coloured plates; very like de Amicis's case; copious references.

* *Lancet*, May 25th, 1888, p. 1025—the woodcut is in the next number. Abraham also records a case of ulceration in a presumed keloid, but the diagnosis was open to doubt. *Brit. Jour. Derm.*, vol x. (1898), p. 96.

and pigmentation follows the disappearance of non-syphilitic tumours sometimes, as in Goodhart's case.

Keloid *en plaque* has been described by Hutchinson and R. W. Taylor,* in which there is a circumscribed, hard, not well-defined plate imbedded deep in the cutis, and projecting very slightly or not at all, though it may adhere, to the epidermis in parts, which is then very pale and smooth, but not glossy. In Taylor's case, the result of a bite, the surface was ridged, and it could be pinched up. There were also two pedunculated fibroma tumours. In one out of the three cases, there were pain and itching at times. In Hutchinson's two cases, there was no recurrence after removal.

In a patient of mine, a surgeon, who had lived in India, there was in the interscapular region a large plaque, not raised above the surface, the size of the hand, which was first observed two years before and had increased in size. There had been no antecedent lesion of any kind. In the plaque, the sebaceous orifices were very obvious, so that the skin looked like orange peel, but whiter than the normal skin, and when pinched up it was slightly thickened. There was no difference in sensibility. The microscope showed fibrous thickening and condensation in the papillary layer, projecting above the level of the skin, while the central portion was depressed below the border and was atrophically cicatricial.

I saw a very peculiar case with Mr. Cursham Corner in a woman of sixty-seven. Twenty-eight years before, the disease began on the right breast, "like the sting of a wasp"; it was not very red, and in five years was only the size of a shilling; then another began on the left breast, and both increased together and during the last year more rapidly. When seen each lesion formed a ring about five inches in diameter, the border varying from one-half to an inch or more. The patches as a whole were flat, thin, and indurated, and could be pinched up like a plaque in the skin one-eighth of an inch thick, quite cutaneous, and not at all adherent to the subjacent tissues. The patches itched and burned "dreadfully," and sometimes they smarted or she had cutting pains. On the right side there was a third oval patch

* Taylor, "Molluscum Fibrosum and its Relation to Keloid," *Amer. Jour. Cut. Dis.*, vol. v. (1887), p. 168, quotes Hutchinson's cases from *Med. Times*, May 23rd, 1885.

three inches by two-and-a-half, which had grown a third larger in eighteen months. It was flatly convex, thicker than the others, and nearly uniform, but near the centre the skin was pale yellow and becoming cicatricial, and there were three large comedones upon it. As no histological examination could be made the diagnosis is open to dispute, but its hardness, slow growth, appearance, and symptoms agreed better with keloid than anything else.

Acne Keloid is a keloid tumour with its long axis transverse, which is seen sometimes on the nucha. It has tufts of hair imbedded in and projecting from it, as the neoplasm has grown up round groups of follicles which have escaped the destructive influence of the antecedent process, which is that of a suppurative folliculitis, and has been described by Kaposi under the name of *dermatitis papillaris capillitii* (which see). French authors have designated it *acne keloid*, which well fits the terminal part of the process. I saw a well-marked instance in a patient of my late colleague, Berkeley Hill, just in time to make the diagnosis before it was excised. Microscopical examination showed that it was composed of dense fibrous tissue.

In a patient of mine there was an analogous condition in the whiskers, where there was a plaque the size of a shilling formed of fibromatous papules with a hair stump in each; the history showed that it started from a pus cocci eruption which began in the scalp. Balzer and Griffon* report a case of keloidal thickening of the scars left by an impetigo on the limbs, in which they found streptococci. A similar condition, following severe acne on the back, is not uncommon.

Etiology.—Sex appears to have no influence, though some authors state that keloid is more common in women. It may occur at any age; one case was congenital (Bryant), and it has been seen in a child of six months, and at all ages from this upwards; but it is rare in old age, and uncommon in puberty. It is said to be more common in some races, especially in negroes,† in whom it very frequently follows slight injuries, the tumours attaining enormous numbers and dimensions. There is some evidence ‡

* *Annales de Derm. et de Syph.*, vol. viii. (1897), p. 285.

† An extreme case with coloured illustrations is published in *N.Y. Med. Jour.*, January 7th, 1893.

‡ Hebra, vol. iii., p. 278; three sisters and the mother were affected. Wilson, Hutchinson, and Bryant also mention cases.

also of heredity and family predisposition, and that there is a strong individual predisposition in some patients, is obvious. According to Kahler, keloid is one of the characteristic symptoms of syringomyelia, but this is an exaggeration, to say the least. The researches of the Keloid Committee of the Clinical Society,* of which I was a member, threw much doubt on the spontaneous origin of keloid, and though it could not be disproved in the face of such cases as those of de Amicis and Vidal, it is certainly much rarer than was formerly supposed. This much is, however, certain, that the so-called false or scar keloid may ensue on the site of very trifling lesions, *e.g.*, leech bites, acne scars, scars from herpes, and all kinds of pustular and vesicular eruptions, and even from contusions, frictions, or blisters in which there is no cicatrix; indeed, one of the most extensive cases I know of followed an attack of prickly heat† in a soldier in India after the irritation had been present a month. It is evident, therefore, that the origin of many so-called false keloids may be overlooked, and they may erroneously be considered to be spontaneous. While the existence of spontaneous keloid is not disputed, it is evident that it is futile to try and draw distinctions between it and scar keloid.

Possibly the frequency of keloid on the sternum and mammæ may be accounted for in women, by the pressure and friction of the stays, and in men, by the frequency with which that region is exposed to similar influence, *e.g.*, leaning against a desk, etc. I have observed scar keloid in association with the following diseases: morphœa, fibroma, and multiple fatty tumours, and appearing on the site of acne and vaccination and revaccination scars. Several cases are on record of its occurrence in psoriasis without antecedent scarring (see that disease). In Anderson's case the keloids were quite white, and I have observed similar

* *Clin. Soc. Trans.*, vol. xiii., 1880, report on Dr. Goodhart's interesting case in same volume, with plate; many of the facts above related are drawn from this report. See also Hutchinson, *Med. Times and Gaz.*, May 23rd, 1885; and *Archives*, vol. iv., 1894.

† Two cases of kelis by T. Longmore, *Med. Chir. Trans.*, vol. xlvi., 1863, illustrated. The disease affected the whole back in honeycomb bands, and there were also tumours on the chest and face. Hutchinson, *loc. cit.*, mentions several instances of keloid nodules developing as a sequence of severely pruritic eruptions. He quotes Marrant Baker's case, Nos. 16 and 17, 1895, Catalogue of Skin Models, Coll. Surg., as an extreme example from urticaria. (See *Urticaria Perstans Verrucosa*, p. 125.)

lesions on the back of a girl, but she knew nothing about their origin, and they were probably congenital.

Pathology.—All that we know of the pathology is, that it is a connective tissue new growth, intermediate in character between a cicatrix and a sarcoma, commencing round the vessels, and ultimately compressing them and the other skin structures, and forming a uniform collagenous mass. It is generally, if not always, connected with previous injury of the affected tissues, though the injury may be so slight as to be overlooked.

It is evident from the etiology that pus cocci lesions are particularly liable to be followed by keloid, and the fact that when once keloid is started in a scar, old scars long quiescent may become keloidal is suggestive of microbic origin for the keloid itself. Probably also hypertrophic scars only occur in wounds which have not been aseptic.

Anatomy.—Numerous observations on spontaneous keloid have been made by Langerhans,* Warren jun.,† Babes, and Denériaz;‡ and upon scar keloid by Kaposi, Neumann, Schütz, and myself.

The first two observers found that in spontaneous keloid, the tumour was imbedded deeply in the corium, and that the papillæ and rete cones over it were intact, and hence they argue that it is a spontaneous new growth in the corium. The tumour consisted of dense bundles of connective tissue, with the fibres running for the most part parallel to the long axis of the tumour and with the skin surface; here and there, were some oblique bundles traversing the tumour; there were but few nuclei and spindle cells, and they were round the scanty vessels in the centre of the tumour, but at the younger peripheral part, both vessels and spindle cells were abundant. Warren also found the vessels affected far beyond the tumour, and these accounted for the recurrence of it after removal. Babes found that the papillæ and cones were absent; either the tumour he examined was really a scar keloid, or the papillæ or rete cones were obliterated by the pressure of the new growth. In scar keloid, the papillæ and rete cones are said to be absent, and Kaposi describes the same dense connective tissue, with few nuclei and vessels, as in the spontaneous form. Denériaz found giant cells in young keloid.

The tumour I examined § had certainly not begun to form more than three weeks, springing up upon each side of a linear cicatrix, and perhaps from the holes made by wire sutures. Sections were made parallel and transversely to the long axis of the tumour.

* Virchow's *Arch. Dritte Folge*, Bd. xl., p. 334, with good *résumé* of previous observations.

† *Sitzungsberichte, Akad. der Wissenschaften zu Wien*, 1868, p. 413.

‡ *Thèse de la Faculté de Berne* (1887). A good detailed analysis in *Ann. de Derm. et de Syph.*, vol. ix. (1888), p. 573.

§ *Brit. Med. Jour.*, September 18th, 1886, p. 544.

The papillæ and rete cones were absent over the greater part of the tumour, but not over all, their presence or absence depending upon the depth of the tumour in the corium. When they were absent over the tumour, they were notably enlarged immediately beyond it. The rete was rather thickened over the tumour, the palisade cells were somewhat irregular in shape, but were in an even line below. Between the rete and the tumour, there was a thin layer of highly vascularised, loose, connective tissue, with the vessels dilated and the fibres running transversely to the long axis of the tumour. In transverse sections, the tumour was seen to be bounded below by fibrous tissue, compressed into a pseudo-capsule imperfect at the sides. The tumour itself was freely traversed by branching dilated vessels which formed incomplete loculi, filled with cribriform tissue, but immediately round the vessel, were fibres running parallel with it. In longitudinal sections, the tumour was seen to consist of very delicate, sharply defined, wavy fibrils or bundles of fibres, running parallel with the long axis of the tumour, and forming elongated meshes with fusiform cells abundantly distributed between them;

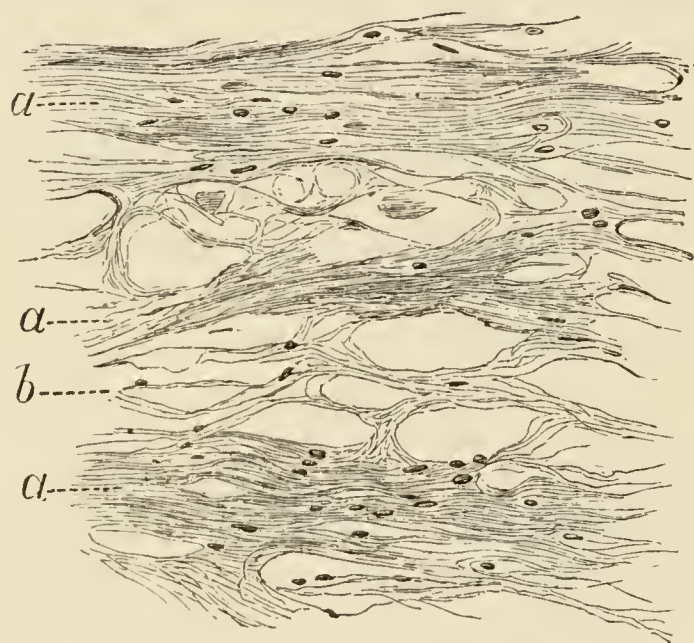


Fig. 53.—Recent scar keloid.

a, a, a, bundles of delicate fibrils of new connective tissue ; *b*, nuclei scattered through the connective tissue bundles.

these cells were most abundant round, but not limited to, the vessels, which were less conspicuous than in the transverse sections. There were no signs of the appendages of the skin in the tumour, but outside it, the hair follicles, sweat and sebaceous glands, were copiously infiltrated with round cells, obscuring or even breaking up their structure. The vessels also for a considerable distance, both beyond and below the tumour, reaching into the fat were also surrounded by round cells, were dilated, and their walls more or less infiltrated. In many of the sweat coils in the fat, there was proliferation within, and infiltration between the acini.

The above observations show that the papillæ may be present over scar, as well as over spontaneous keloid; and since Babes has shown that they may be absent in the spontaneous, and others have demonstrated their absence in the scar form, it is obvious that no argument, as to the origin of the tumour, can be founded on the presence or absence of the papillæ or rete cones. Leloir, however, still upholds Kaposi that this is a valid mode of distinction. *Vide* also Unna's *Histopathology*. I agree, however, with

Hutchinson, that clinical facts do not support his statement, "That the keloid scar never extends with fibrous processes into the healthy tissue, for, being due to the granulation, it is only present in the neighbourhood." Schütz examined an old growth and found no elastic tissue and no cells.

Diagnosis.—An apparently spontaneous scar-like tumour, with lateral claw-like processes, forming over the sternum or neighbourhood, is so distinctive that error is scarcely possible. Whether arising on a scar or not, keloid differs from a *thickened cicatrix*, by its extension beyond the limits of the original scar. The diagnosis between spontaneous and *scar keloid* is scarcely worth making; it generally depends upon the patient's statement as to its origin. In multiple spontaneous keloid, like de Amicis's and Vidal's cases, symmetry in the arrangement of the tumours would be an important distinction.

Prognosis.—Spontaneous involution is not so rare as is usually stated; it is more likely to occur in the young, when the tumour is certainly of scar origin, and some say, in syphilitic scars, than when apparently idiopathic. As a rule, the tumour is slowly progressive up to a certain point, and then remains stationary for an indefinite time.

Treatment.—This until lately was unsatisfactory; removal, however obtained, was almost invariably followed by return of the tumour. A very wide incision, so as to get beyond the diseased vessels, offers the best chance of success. Morphia or cocaine injection is sometimes necessary when the tumour is very painful; belladonna or other anodynes locally applied may sometimes be desirable. Quinine is recommended also for the pains, but is of doubtful utility; phenacetin and antipyrin; absorbents, both external and internal, are useless, but Verneuil is much in favour of pressure, and has even cured cases with the elastic bandage. Care must be taken to effect the pressure without friction, or the growth will increase. Vidal has produced great improvement, and even disappearance of the tumours, by multiple, deep linear incisions, mincing it up so as to divide the vessels as thoroughly as possible. The operation has to be repeated many times, but from the first there was complete relief to the pains and irritation. Marie, however, after employing this procedure observed an eruption of tumours of the same nature on points which had not been the seat of any wound or cicatrix. This led him to infer that a specific microbe had been introduced into

the circulation by the scarifications. He therefore injected oil with 20 per cent. of creasote. Under this the tumour became swollen and pale, followed by severe pain, which lasted for some hours. At the end of two or three days the tumour became violaceous, a vesicle formed on the surface—it passed into the state of dry scar. Balzer and Mousseaux have had equal success with it. Tousey of New York, R. C. Newton, and Van Hoorn have had success by injecting a 10 per cent. solution of thiosinamin either in alcohol, or better, as it is less painful, in equal parts of glycerine and water. I have had excellent results with this treatment.

In an extensive hypertrophic scar all round the lower jaw from a burn, thiosinamin injections,* twenty minims for a dose, distributed along the growth produced great improvement, the tumour flattening, becoming less vascular, and therefore paler. Another case with bands across the elbow-joint was quite cured. The *Röntgen rays* had an excellent effect in another such growth on the buttocks of a child of four from a scald. After fourteen exposures of a quarter of an hour each with three ampères, a vibrating interrupter, and the tube three inches away, inflammatory reaction set in, and when this had subsided the growth had shrunk to a quarter of its original prominence, was pale, and no longer produced inconvenience when the child sat down. Herschel Harris of Australia† also had a successful case after fifteen sittings, a soft tube with six ampères, and the tube five inches away. This latter method of soft tubes and six ampères runs the risk of excessive reaction. A second series of eighteen sittings completed the cure in Harris's case. My experience leads me to rely most on thiosinamin injections and *Röntgen rays*. Thyroid extract administration has been used with success, but I have had no experience of it. Where the growths are numerous it would find its best application.

Hardaway and Brocq advocate electrolysis by means of needles, this also evidently acting by occlusion of the vessels. The current should not be strong, and the needle not kept in long, or aggravation may ensue. If the positive pole, which coagulates

* In a 10 per cent. solution of thiosinamin, some of it precipitates unless the solution is warmed just before injection. In the first case mentioned the treatment had not been completed at the time when this was written.

† Abs. *Brit. Jour. Derm.*, vol. xiii. (1901), p. 279.

better, is used, the needle must be of gold or irido-platinum. I have had some success with this treatment and can recommend it. A surgical needle curved on the flat and attached to the negative pole I have found best; it is passed under the growth, and a current of three ampères used for twenty to thirty seconds for each insertion. It is necessarily painful.

FIBROMA.*

Deriv.—*Fibra*, a fibre.

Synonyms.—Fibroma molluscum; Molluscum fibrosum; Molluscum simplex; Molluscum pendulum. Recklinghausen's disease, Neuro-fibroma.

Definition.—Soft tumours, due to hyperplasia of the connective tissue of the deeper layer of the corium, and of the subcutaneous tissues.

Fibroma Simplex. *Synonym.*—Acrochordon. Soft warts, "verrues charnues," are terms applied to the very common, from pin's-head to pea-sized, soft, pedunculated, vascular, and mole-like excrescences, which with their relics, in the shape of the empty hernia-like sacs of skin, from which the contents have disappeared, are frequently seen upon the face, neck, and between the shoulders, and less frequently elsewhere in degenerated skins, chiefly of elderly people; but this is not the kind to which the term **Fibroma** is usually applied, and for which many dermatologists consider that **Neuro-fibroma**, or Recklinghausen's disease, would be more correct. This is a much rarer condition, only amounting to 9 in

* *Literature.*—Author's Atlas, plate lxxiii., figs. 1 to 4. *Med.-Chir. Trans.*, vol. xvi., Murray's and Pollock's cases, with coloured plates and photos; ditto, vol. xxxvii., p. 155, V. Mott's cases, five cases with two portraits, small tumours. 1895 *Cat. of Coll. Surgeons*, Derm. Series, No. 270 to No. 283. *Cat. of Guy's Hosp.*, skin models 497 to 501. *Clin. Soc. Trans.*, vol. xiii., p. 166, Sangster's case, engravings, histology, and many references; ditto, vol. vi., p. 160, and vol. viii., p. 138, G. Fritsche's. *Hutchinson's Lectures*, "Rare Diseases of the Skin," p. 196. *Path. Soc. Cases*, vol. xvi., Wright's case; vol. xxx., Wood's case by R. Royes-Bell; vol. vi., Beale's. Recklinghausen: "Ueber die Multiplen Fibrome der Haut," Berlin, 1882—an able and important monograph. *Skin Diseases in India*, Fox and Farquhar's Rep., App. VI., p. 155; nine cases by Wise of Dacca, etc. R. W. Taylor, "Molluscum Fibrosum, and its Relation to Acrochordon and Keloid," *Jour. Cut. and Gen. Ur. Dis.*, vol. v. (1887), February and May. Walter Whitehead's case, *Brit. Med. Jour.*, vol. i. (1902), p. 757, illustrated.

16,863 American cases, and 1 in 10,000 in my own and McCall Anderson's cases, though this probably under-estimates the frequency, as such cases very often go to the general surgeon.

There are three clinical varieties of this form:—1. Multiple small soft tumours, in which the surface of the skin is almost unchanged; 2. Small tumours like the first variety, with large pendulous tumours (fibroma pendulum); 3. Fibroma pendulum without other tumours.

Symptoms.—The tumours which constitute this affection are for the most part roundish or teat-shaped; they may be firm in parts, but are generally lax, so that the contents can, when pinched up, be rolled between the fingers. The skin over them is either tense or lax, usually smooth, and of normal colour and surface, though sometimes bluish or pinkish from vascularity, while those with constricted base are of a brownish or brownish-red hue; a hair sometimes, or one or more comedones, conspicuous from their size, are to be seen in the centre. In almost all other respects, they present great variety. In number, they may be from one or two up to hundreds, and even thousands; in size, they are from a pin's head to an egg or an orange, or larger, but for the most part they do not exceed a walnut. They are round, oval, pyriform, or polypoid; some are imbedded rather deeply under the skin, and are to be felt rather than seen; others are distinctly raised, but still sessile, and with a broad base like a mollusc; while others again have a pedicle, which becomes narrow eventually, and the tumour then hangs flabbily down, like a polypus. The tumours are quite painless, and give rise to no inconvenience except such as may arise from their position, unsightly appearance, or numbers.

The trunk is the part of the body where they are most constant, in front more than at the back, while there are only a few on the sides. Next in frequency is the head, especially the occiput, then the face and limbs, but they are seldom numerous on the latter, and they are rare on the palms and soles, where they become flattened by pressure. In a few cases, the mucous membranes are involved,* especially the lips, gums, hard-palate, and tongue.

While in a small proportion of the tumours the contents become absorbed and leave an empty sac, as a rule, they gradually

* In Walter J., U.C.H., there was a tumour on the buccal mucous membrane, and two on the side of the tongue.

increase * in number and size, but do not shorten life in any way. Sometimes when they have been absorbed, a pseudo-tumour is left, the skin projecting and forming a slightly translucent bluish-tinted tumour, which under pressure with the finger disappears below the surface like a soft air-bladder.†

Those tumours which are plexiform and obviously connected with nerve cords may be freely movable transversely but very slightly in a vertical direction. They are especially found on the radial, saphenous, and crural nerves.‡

Irregular patches of brown pigment are frequently seen scattered about the body surface between the tumours, and there is freckling also, and in one of my cases, the whole face had become darker.

Besides this, the skin is often coarse, thick, and pigmented; and hairy moles and vascular nævi and other skin deformities are common.

When the tumours, instead of growing in their usual slow, almost imperceptible manner, develop rapidly, the skin containing them becomes vascular, red, purplish, or mottled, then it excoriates, discharges, and ulcerates at the apex, and even sloughing may ensue; and when the growth is so rapid as to stretch and occlude the blood vessels at the neck, which supply the tumour, the whole thing may slough off. Injuries such as friction, blows, etc., may produce similar results.

Cases of soft fibroma of the palm are recorded by Sydney Jones, § R. W. Smith, and Hutchinson (Jones's case was enclosed within the dilated tendon sheath); and a case of hard fibroma of the prepuce by H. Perrin.

Four remarkable cases under the title of **Fibroma fungoides** are related by Tilbury Fox,|| but they do not belong to the classes

* Fig. 4 of my Atlas, *loc. cit.*, from a late photograph of the case of plate xviii., *Syd. Soc. Atlas*, showing enormous increase in numbers. Plates lxiv. and lxv. of Hutchinson's smaller Atlas show face and back of the same man at a late stage.

† Compare "multiple benign tumour like new growths," p. 649. And Pospelow's and Van Harlingen's so-called lymphangioma tuberosum multiplex cases were in all probability this form of fibroma or neuro-fibroma.

‡ Numerous acquired neuro-fibromata of firm consistence and of a quite different character to those of Recklinghausen's disease are recorded in the interesting treatise on Neuroma by R. W. Smith, *Syd. Soc.* reprint, Fascic xi. of *Atlas of Illustrations of Pathology*.

§ Sydney Jones, *Path. Trans.*, vol. xxxviii. (1887), p. 324, with references.

|| Tilbury Fox, p. 352, with illustrations of two of the cases.

of tumours which are now under consideration. His second case was probably a mycosis fungoides. His third was one of Murray's cases, and was possibly an early stage of the Sömmering-Behrend case* as far as the fingers are concerned. His fourth case suggested mycosis fungoides, but was said to be getting well under large doses of iodides.

A fibromatous growth round the hair follicles of the back † occurs in nodules isolated or aggregated into an infiltration in association with adenoma sebaceum, with which it is described. Simple fibromata and the empty sacs left after their absorption are also common in that disease.

The late stage of erythema diutinum elevatum has been reported as fibroma of the hands. Rare forms of fibromatous thickening of the skin are mentioned under Keloid.

In the cases with **pendulous tumours**, which are much rarer, in addition to the ordinary tumours, there are others much larger, consisting of huge masses sometimes weighing many pounds. These tumours are always very lax; they may have a broad attachment, but always much less than their diameter, and they hang down in pendulous masses, often in overlapping folds like a coachman's cape, and between these folds there is often a serous foetid discharge. They feel simply like masses of skin and fat, and the skin, besides being lax, is coarse, often pigmented, and covered with plugged sebaceous orifices.

The favourite sites for the origin of these tumours are the occipital region, the sides of the neck, the face, arms and axillæ, breasts, flanks, buttocks and thighs, and, according to Alibert, the eyebrows, abdomen, and labia.

Instances of these remarkable tumours, in association with ordinary fibroma, are related by Bell, ‡ Alibert, § Virchow, || Wright, Pollock, Royes-Bell, and many others, scattered through the medical journals.

* Reproduced Hutchinson's smaller Atlas, plates lx. and lxiii.; Author's Atlas, plate lxxxvii., fig 2.

† *Med. Chir. Trans.*, vol. lvi., p. 235, with plate. They are reported as three cases of molluscum fibrosum in children.

‡ John Bell, *Principles of Surgery* (1808), vol. iii.

§ Alibert, *Monographie des Dermatoses*, p. 796 (Paris: 1832), with plate. This is reproduced in Author's Atlas, plate lxxiii., fig. 3. Fig. 2 shows a huge tumour hanging from a man's side.

|| Virchow, *Die Krankhaften Geschwülste*, vol. i., p. 325.

An extraordinary case of the kind was brought to the Pathological Society by Treves. I had an opportunity of examining the patient there, and at a show, where he was exhibited as an "elephant man." The bulk of the disease was on the right side; there was enormous hypertrophy of the skin of the whole right arm, measuring twelve inches round the wrist and five round one of the fingers, a lax mass of pendulous skin, etc., depending from the right pectoral region. The right side of the face was enormously thickened, and in addition there were huge unsymmetrical exostoses on the forehead and occiput. There were also tumours affecting the right side of the gums and palate; on both legs, but chiefly the right, and over nearly the whole of the back and buttocks; the skin was immensely thickened, with irregular lobulated masses of confluent tumours, presenting the ordinary molluscous characters. The left arm and hand were small and well formed. The man was twenty-five years old, of stunted growth, and had a right talipes equinus, but was fairly intelligent. The disease was not perceived much at birth, but began to develop when five years old, and had gradually increased since; it was, of course, ascribed to maternal fright during pregnancy.

This condition may also occur without any of the small tumours, is more diffuse than the last class, and should then be called **Fibroma pendulum** instead of **Dermatolysis**,* or lax skin, as is usually done; it is often described as a separate disease, but it is only an extreme end of a chain, in which the earlier links are wanting. The following case, which came under my observation some years ago, is a good example of an acquired condition:—

The patient was a storekeeper on a ship, æt. thirty-nine, and had fallen down the ship's hold fourteen years previously; a large abscess formed on the buttocks, and he was paraplegic for eight months; the abscess healed up, but continued to break out again at intervals. The buttocks began to increase in size two years after the accident, beginning at the sinus opening, and had gone on growing ever since; the leg began to enlarge ten years after the accident. Enormous pendulous folds of skin and

* Valentine Mott called these tumours Pachydermatocele, but this term has also been used for elephantiasis Arabum. Ketley reports a "flounce" case of the buttocks as "chalodermia": *Archiv f. Derm. u. Syph.*, vol. lvi. (1901), p. 108, illustrated; and there is an extreme case illustrated in "*La nouvelle Iconographie de la Salpêtrière*" (1902), p. 216.

subcutaneous tissue overlapping like flounces, depended from the twelfth rib to about halfway down the thighs, forming huge rolls of lax tissue, which were freely movable in any direction, and always took the most dependent position; there was a similar condition of the tissues of the right leg below the knee. The skin over the tumours was healthy-looking, but more pigmented than the rest of the body, and sensation was unaltered. The man was of short stature, but intelligent, and his general health was good, except that he had shooting pains in the right leg, and in various parts of the tumour. There were no ordinary fibroma tumours, but from time to time, small tumours, the size of a bean, appeared in the abdominal wall; the skin over them was reddened, and they did not burst externally, but, when he squeezed them, they ruptured internally, and disappeared at once. Sensibility was not diminished over the tumour as it is in some cases.

In another, a somewhat similar condition of hyperplasia of the subcutaneous tissue, but less developed, and not so lax, was limited to the palms, soles, sides of neck, nose, and tonsils, in the last part necessitating excision. This condition supervened after scarlet fever, but there was no evidence of albuminuria * either past or present. These cases, it is to be noticed, came on later in life, but differ, only in their origin, from the others which begin in early childhood, such as Valentine Mott's or Fritsche's cases. J. Cowan † describes two cases of hypertrophic folds of the scalp in idiots. Also Cazenave's Atlas, plate xxxvii.

There are also congenital cases where there is loose attachment of the skin without hypertrophy, and it is to these that the term **Dermatolysis** should be restricted. In 1657, a Spaniard, ‡ Georgius Albes, is reported to have been able to draw the skin of the right pectoral region to the left ear, or the skin under the chin over the face to the vertex, while the skin over the knee could be extended half a yard, and it retracted to its normal position, and was not

* Shown at Clin. Soc. by Ballance and Hadden, January 25th, 1885.

† *Journal of Mental Science*, October, 1893, p. 539, with plate.

‡ Related in Job A. Meek'ren's *Observationes Medico-Chirurgicæ* (Amstel.: 1682), chap. xxxii., "De Dilatabilitate Extraordinaria Cutis," with engraving. Quoted in John Bell's *Surgery*, vol. iii. (1815), p. 36, and in *Coll. of Surg. Museum Dermatological Catalogue*, 1895, No. 284, p. 96. Ohmann-Dumesnil reports three cases of "elastic skin," but not so extreme as the above. *Internat. Med. Magazine*, vol. i. (1892), p. 244.

in folds; this mobility was limited to the right side. An "elastic-skinned man" was exhibited in London in 1882. Another case of a young man, æt. nineteen, is reported by Seiffert, who examined some skin from over the left second rib, and found that, contrary to Kopp's supposition, the elastic fibres were quite normal, but that there was a transformation of the connective tissue of the dermis into an unformed tissue like a myxoma, with total disappearance of the connective-tissue bundles. This brings it into relationship with fibroma, in which this ill-formed gelatinous connective tissue is a marked feature. Laxity of the skin after distension is often seen in multiparæ, both in the breasts and abdominal walls, from obesity, etc., and to a slighter extent in the degenerated skin of old age, but in all these, the skin falls into folds.

Etiology.—Heredity* and, occasionally, congenital predisposition are the only positive causes assignable.

Fibroma occurs in both sexes and in various races, beginning often in the early months of life, and nearly always in childhood. It has no effect upon vitality, may be seen at every age, and in all stages of development, though the tumours are seldom large in early life.

Fibroma pendulum alone is more frequently acquired in later life, and in the case related, was the result of injury and suppuration; instances of localised fibroma, the result of injury, have also been related by Schwimmer and by Taylor of New York;† but the cause cannot be traced in most cases. The Chinese are said to be more liable to it than other nationalities, and in them the tumour may attain to an enormous size.

All Hebra's cases were in individuals "stunted in bodily growth, and of more or less defective mental capacity." This is true of the majority of cases, but there are many exceptions.

* Virchow's cases—quoted by Hebra, vol. iii., p. 341, father, grandfather, brothers, and sisters affected; Ochterhony's case, *American Arch. Derm.*, July, 1875, of a negro woman and her child; and Atkinson's cases, *New York Med. Jour.*, vol. xxii. (1875), p. 601, of a brother and sister affected, who said that their father had some kind of tumours—may be referred to. See also Wise's cases in Fox and Farquhar's *Tropical Skin Diseases*, App. VI., p. 108, and Wagner's *General Pathology*, p. 383, in which a father and son were affected.

† Taylor, "Molluscum Fibrosum and its Relation to Keloid, etc.," *Amer. Jour. Cut. Dis.*, vol. v. (1887), p. 161. Also p. 41, on "Development and Course."

Pathology.—The most probable theory is that the disease originates in some congenital defect of development of connective tissue, though the tumours may not reveal themselves for years.

In 1882, von Recklinghausen* stated that the soft tumours were formed by the overgrowth of the inner lamellar sheaths of the nerve cords, the outer dense layer of the nerve sheath not being involved. That, originally springing from subcutaneous nerve trunks, they grew upwards still along the nerves round the sweat coils and other appendages of the skin and the coats of the blood vessels. The connective tissue thus derived is soft and transparent, and different from the connective tissue of the skin. Krieger, Unna, and others confirm these observations, and point out that this explains the frequent plexiform arrangement of the deeper tumours. While the papillary layer and epidermis are usually unaffected, the appendages of the skin are more or less modified by the neoplasm, either by constriction or stretching, but the nutrition of these organs is unaffected, though their connective tissue is gradually replaced by that of the new growth.

Unna thinks that any congenital or nævoid growths are complications, and do not belong to the neuro-fibromata. Unna does not admit that these neuro-fibromata are of congenital or nævoid origin, but that they are "true acquired fibromata;" but clinically these growths are so mixed up and often show themselves very early in life, together with other admitted congenital deformities, that they cannot be logically separated, and most authors admit their congenital origin.

In the pendulous tumours, especially in those which have followed injury, the presumption is in favour of their being largely due to the obstruction of the superficial lymphatics, at least in the diffuse cases, but we are entirely ignorant as to how the obstruction arises. This theory, and many points in its anatomy, bring it into pathological relationship with elephantiasis Arabum, though there are many striking clinical differences.

The "*keloid en plaques*" of Taylor and Hutchinson are in Unna's view "a simple fibroma cutis."

Anatomy.—On section, the substance of the tumour is found to be made up of more or less imperfectly developed fibrous tissue, from which a small quantity of clear, yellow fluid can be pressed out. In a medium-sized tumour, the fibrous tissue is firmest and most developed at the base and

* *Loc. cit.*, and Unna's *Histopathology*, p. 844, and references.

in coarse bundles; in the centre, it is loose and gelatinous, and at the periphery fine and delicate, like the normal corium, of which the papillary layer and its epidermal covering are quite unchanged. It must not, however, be supposed that there is any abrupt transition from the firm to the gelatinous tissue. In a very young or small tumour, the whole contents may be gelatinous, while in an old or very large one, there will be much perfect and compact, but coarse, fibrous tissue, with fine fibres between the meshes, but very little gelatinous tissue. Between the layers are cells with large, strongly refracting nuclei, and the cells may be in strata, foci, or scattered between the bundles; they are most abundant where the gelatinous tissue predominates, and are therefore comparatively scanty in the old tumours. Large vessels enter and leave the tumour at the base, and terminate in fine capillaries at the periphery. The condition of the glands has already been alluded to.

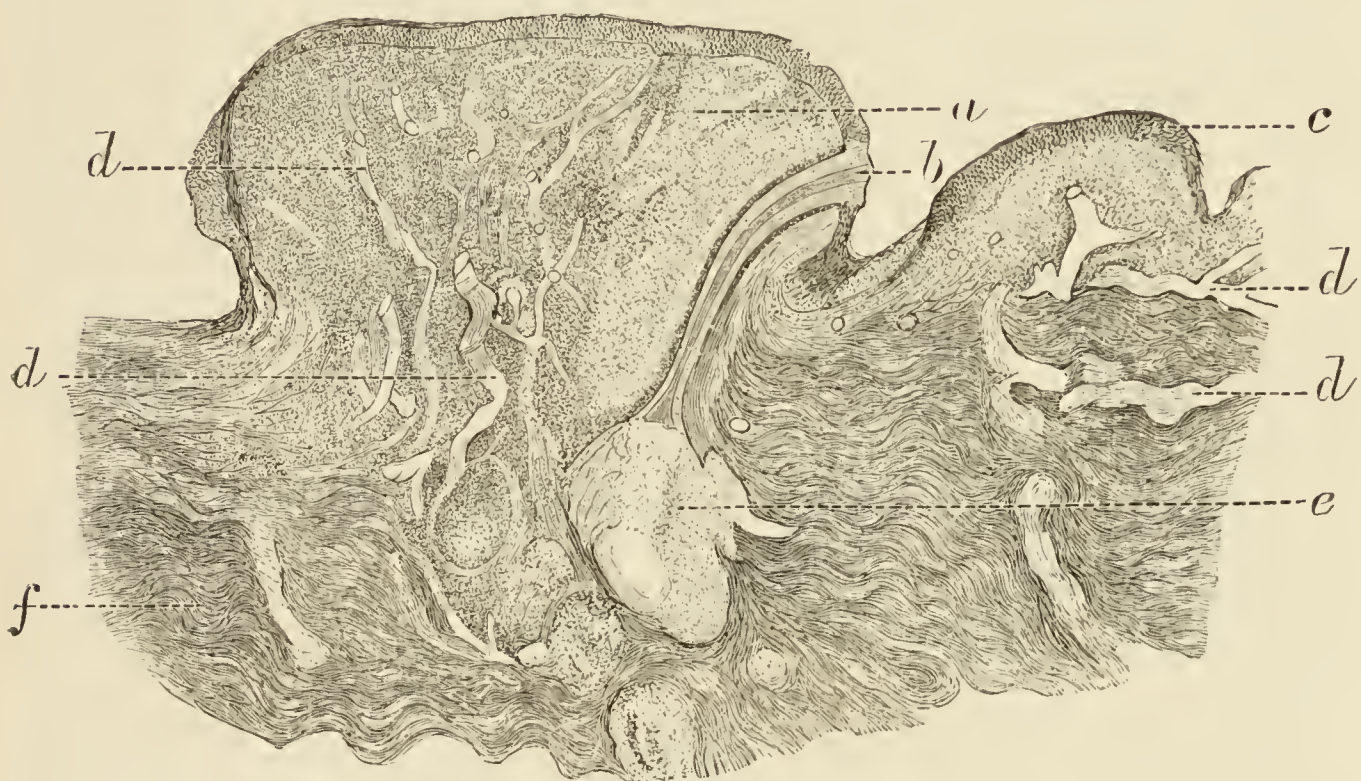


Fig. 54.—A pin's-head-sized tumour of fibroma $\times 50$, composed of gelatinous tissue.

a, portion of sweat duct; *b*, hair follicle; *c*, another tumour; *d*, *d'*, large vessels supplying the tumours; *e*, sebaceous gland; *f*, fibrous tissue of corium.

The above description was made from tumours of my Atlas case many years ago, and, though true as far as it goes, more modern staining methods show that, according to Unna, a peculiar variety of mast cell must be added as "the most striking constituent." They are pretty regularly distributed and are numerous in the larger nodules. There are some ordinary mast cells, and others which with the polychrome methyl blue show a regular dense oval halo staining red, and about double the size of the contained mast cell with its small blue nucleus.

Diagnosis.—When there is a large number of soft sessile or pedunculated tumours on the trunk, there can be no difficulty about the diagnosis.

Multiple fatty tumours have but slight resemblance; they are

flatter, generally lobulated, never pedunculated, and do not project in the globose way that the majority of the fibroma tumours do.

From *soft moles*, the fact of moles being congenital would be sufficient; they, too, are nearly always pigmented. When few in number, the tumours which grow between the shoulders in elderly people are very like them, and for practical purposes it may be considered that they are the same. One difference is generally present in the latter, viz., an alteration in the epidermis, which only occurs in fibroma when it has been inflamed.

In *sebaceous cysts*, the sebum can be pressed out in large quantities, and the sac partly emptied, while in fibroma a large comedo is the most that can be squeezed out, and often nothing at all.

The *cysticerous cellulosa cutis* gives rise to subcutaneous pea to hazel-nut-sized tumours, which are so hard that they are often regarded as fibrous tumours. Their great mobility, obvious subcutaneous position, scattered distribution, and clearly uniform size and hardness, the age of the patient when they commenced, as they would be unlikely to occur in childhood, are all points suggestive of their character, but their extreme rarity makes one forget the possibility of their existence.

Prognosis.—The tumours will almost certainly increase in number and size, though generally very slowly. They are merely inconvenient from their size and position, and are never dangerous to life.

Treatment.—Those that are pedunculated can be removed by ligature, the galvanic cautery, or the *écraseur*. The rest may be excised if they are not too numerous, but the removal must be complete.

Keloid has followed excision in several instances, including one of my own. (See Keloid.)

Whitehouse * gave three Asiatic pills a day for three months, when large numbers of tumours disappeared, and after increasing the number to four or five, at the end of seven months half the original number had disappeared.

In the dermatolytic cases, where a part only of a tumour has been excised it has regrown; but where complete ablation has been practised, there have been several successful operations without recurrence, even with very large masses, such as Mott's, Kosinski's (35 lbs.), Pollock's, Stokes', John Wood's cases, and

* *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. xvii. (1899), p. 583.

others. Care should be taken to secure the vessels before they are cut, as the bleeding may otherwise be very formidable, especially in the large tumours.

NEUROMA.

Deriv.—*νεῦρον*, a nerve.

Synonyms.—Nerve tumour; *Fr.*, Névrome.

The tumours of the skin, thus designated, are really fibro-neuromata, and consist, for the most part, of firm connective tissue, starting from the neurilemma, with non-medullated fibres over, but seldom within, them. Only two instances in which they affect the skin primarily are on record, viz., by Duhring and Kosinski, the “painful tubercles” * of Wood and other so-called instances of neuroma and fibro-neuroma of Recklinghausen, Köbner, and others being really subcutaneous.

The two cases alluded to were both men: Duhring’s, † æt. seventy, and Kosinski’s, ‡ æt. thirty. In the first, they had been developing for ten years, in the second for fourteen. They affected in one case, the left scapular region and the arm to the elbow—*i.e.*, branches of the circumflex chiefly—and in the younger man, the outer and upper two-thirds of the thigh and the buttock—*i.e.*, the small sciatic and external cutaneous. The tumours were flat, firm nodules, from a pin’s head to a split pea or a hazel nut in size, confluent and disseminated, imbedded in the skin itself, and therefore movable only with it. The skin between the nodules was normal when pain was absent. The tumours were not painful at first, but became so afterwards, especially on pressure, which, in Kosinski’s case, sent the pain radiating in all directions; while, in Duhring’s, violent paroxysmal attacks of pain, shooting down the arm, occurred, during which the affected area became hotter and violaceous in colour. In his case also, there was slight scaliness over the nodules. Comparison with Hardaway’s case of multiple

* Under the “Tuberculum dolorosum” cases of different structure are recorded, *vide*. Unna’s *Histopathology*, p. 850. For other neuromata, *vide* R. W. Smith’s *Treatise*, *loc. cit.*; also *Neuroma and Neuro-fibromatosis*, by Alexis Thomson (Edinburgh: 1900), 4to.

† *International Atlas*, plate xxxv. It was previously published in *Amer. Jour. Med. Sciences*, October, 1873, as a “Case of Painful Neuroma of the Skin.”

‡ “Neuroma Multiplex,” *Centralblatt für Chirurgie*, No. 16, 1874.

myomata shows great clinical resemblance. Microscopically, in Duhring's case, the tumours were found to be in the skin, and "consisted essentially of the elements of the skin, densely packed connective tissue from medullated nerve fibres." It agreed with Virchow's description of amyelinic neuroma.

In both instances, immediate relief from the pain was obtained, by removing a portion of the nerve supply, the brachial plexus, and small sciatic respectively, which was followed by gradual subsidence of the tumours. Unfortunately, in Duhring's case, immunity only lasted six months, and within a year the pain was progressively returning, and in two years was as bad as ever. He lived six and a half years after the operation, dying at eighty-two without further change in the skin.

MYOMA.*

Deriv.— $\mu\upsilon\varsigma$, a muscle.

Synonym.—Dermato-myoma. Muscle tumour.

From a pathological standpoint, dermato-myomata may be divided into those of superficial and those of deep origin, which practically corresponds to the clinical subdivision into single and multiple.

The multiple tumours, though rare, as there are a little over a dozen indisputable cases on record, are the most interesting to the dermatologist, and will be considered first. Besnier (1880) was the first to describe a living case, and to give a clear account of the disease.

* *Literature.*—*Brit. Jour. Derm.*, vol. ix. (1897), pp. 1 and 47: a case of myoma multiplex by the author with coloured plate. Abs. of all cases to date, with references and critical observations. Neumann's case was published contemporaneously in *Archiv f. Derm. u. Syph.*, vol. xxxix. (1897), p. 3, also with coloured plates. See also Besnier-Doyon's Kaposi, vol. ii., notes p. 346. T. von Marschalko has published a case in a man, æt. twenty-eight, in whom it began eight years previously, and quite suddenly, he said. It began with itching, and was followed by pain and tenderness; pinching them up gave intense pain. They were closely aggregated in a large area on the right leg, where there were over one hundred nodules, while on the left thigh were about fifty more scattered. The size was from a pin to a split pea. *Monatsh. f. prakt. Derm.*, October, 1900, p. 313. Abs. *Brit. Jour. Derm.*, vol. xiii. (1901), p. 68. In Leslie Roberts's case, which also came under my observation—the lesions were small, pea-sized and smaller, on the cheek of a lady, æt. eighteen: *Brit. Jour. Derm.*, vol. xii. (1900), p. 117.

The individual lesions vary from a millet seed to a hazel nut, but few are larger than a pea. The colour is usually brownish-red, or some other shade of red removable by pressure, but in Hess's and Lukasiewicz's case it was yellowish, and even translucent. The surface of the skin over the tumours is always normal, the texture firm; they are in the skin, and freely movable with it over the subjacent parts. While they may be isolated, there is a strong tendency to group with or without coalescence, sometimes amounting to an infiltration. The groups may form into irregular patches, lines or bands; but wherever there is an interval, the intervening skin is normal. The numbers of the tumours is very variable, sometimes being innumerable (Verneuil and Besnier), or they may be in moderate numbers and with a very limited distribution, the latter being the rule.

In Hardaway's, Hess's, and my first case, there was only a single patch, but where there are more there is no symmetrical arrangement, either in the groups or isolated lesions. Further, there is no special localisation, as they occur on the upper and lower limbs, while the trunk, neck, and face (four cases) have been attacked in different instances, while in Verneuil's all the regions of the body were involved; but some authors exclude Verneuil's case and that of Brigidi and Marcacci.

The new growths develop very slowly and at first singly, but with a tendency to constantly increase both in size and number. There has been no antecedent lesion, except in Brigidi and Marcacci's case, in which swelling of the part was the first sign observed. Sooner or later there was pain in half the cases, the rest having been painless throughout. The pains are usually spontaneous, paroxysmal, and severe, lasting from minutes to hours; but they can always be excited by strong pressure, and sometimes by changes of temperature, especially by cold.

These pains develop gradually, being absent until the tumours are the size of a pea or larger, but in Hardaway's case, pain in the region in which the tumours subsequently appeared was the first symptom to attract the patient's attention. Itching was present in one of Jadassohn's cases, and preceded the pain in Marschalko's case.

Microscopical examination makes it probable that the pains are due to pressure on the nerve-endings outside the tumours. In other respects the tumours are always perfectly benign, never

infect glands, and never recur after excision, but the pain has not been relieved in all cases by the operation.

Of thirteen cases, nine were females and four males, and the age at which the tumours began to develop varied from infancy (Hess's case was probably congenital) to sixty years.

Wolters reports two cases from Doutrelepon's clinic which, on microscopical grounds, he claims to be dermato-myomata, but my reason for excluding them from this group are given in my paper referred to. Clinically they correspond to xanthoma multiplex.

Morris has shown two cases at the Dermatological Society, one in a man of fifty-four, the other in his daughter, æt. about twenty-five. The tumours were painful, and the general appearance was like Lukasiewicz's case.

Pathology.—The bulk of the tumours is made up of smooth, muscular fibres, derived in most cases from the arrectores pilorum, but in Hardaway's and Hess's cases they were derived from the muscular coat of the vessels. In my case, the tumours were in the corium round the hair follicles, but did not actually alter them, but invested them with a thick layer of smooth, muscular fibres, which also separated the acini of the sweat and sebaceous follicles; the muscular coats of both arteries and veins were conspicuously thickened.

Diagnosis.—The most constant features are their slow progressive development in number and size; the tendency to group; their unsymmetrical distribution; the fact that they are seldom larger than a pea; their dull red or yellowish colour, firm consistence, and mobility over subjacent surfaces, and their strong tendency to ultimately become severely and paroxysmally painful; in this and their close grouping resembling true neuroma. Most of the cases have not been diagnosed until a microscopic examination has been made. Thus :—

Lesser* diagnosed one case of lymphangioma as dermatomyoma, but the microscope showed its real nature. That it is often no easy matter to decide the nature of cutaneous and subcutaneous nodules is shown by the observations of Chantelux. In four cases in which nodules were excised and examined, one was a papillary fibroma of a sweat gland, another was a tubular epithelioma of a sweat gland, a third was a subungual corpus-

* *Virch. Archiv*, Bd. 123, Hest i.

cular neuroma, while the fourth was a fibromyoma of the inner side of the ring finger. In my second case I diagnosed it as lymphangioma-like nodules, probably adenomata.

Treatment.—When not too numerous and over too wide an area, they may be excised without fear of return, or if quite small they may be destroyed by electrolysis.

The more deeply seated leiomyomata (smooth muscular tumours) arise from the deep muscular layer of the skin, or from embryonic remnants, or reach the skin secondarily. They are mostly but not always single, are more common than the superficial form, and chiefly concern the general surgeon. Cases have been reported by Virchow, Förster, Klob, Sokolow, S. Marc, etc.

They may be sessile or pedunculated, from an almond to a walnut in size, as a rule, but may be as large as an orange. They occur chiefly on the mammæ and the male and female genitalia (in Passalacqua's case it was on the crest of the tibia), are contractile on exposure to cold, vascular, slow-growing tumours, and usually painless, but were intensely painful in Virchow's case.* They consist mainly of involuntary muscular fibres, but may contain much fibrous tissue and form a **fibromyoma** or be highly vascular, cavernous and erectile, constituting **angiomyoma**, or, if the lymphatics are involved, **lymphangiomyoma**. The angiomyomata are more frequently multiple than the rest, and are said by Babes to be derived from the arrectores pilorum. Ablation is the only remedy.

NÆVUS PIGMENTOSUS.

Synonyms.—Pigmentary mole; Nævus spilus; *Fr.* Nævus pigmentaire; *Ger.*, Fleckenmal; Pigmentmal; Nævus pigmentosus; Linsenmal.

Definition.—Congenital pigmentary deposits, with or without other changes in the skin.

Symptoms.—Moles may be simply collections of pigment in the skin, without any other change (**nævus spilus**). These are generally quite small, not larger than a large lentil, are most common on the back, but may be seen elsewhere. They sometimes develop

* In Virchow's case in 1854, about a dozen developed about the nipple of a man.

into moles of the usual character. Hebra considers that they are really not congenital, and therefore ought not to be called *nævi*, but it is impossible to distinguish those present at birth from those formed subsequently. They are often mistakenly classed with lentigo.

Another form of mole is more or less raised, and the surface is furrowed or otherwise uneven, and may be rough and warty in character (*nævus verrucosus*), or covered with soft papillary growths (*nævus papillomatosus*). The secretion from the papillary mole is often offensive. Some of the large ones are soft and lax, containing a quantity of fat and loose connective tissue, and resemble dermatolytic growths (*nævus lipomatodes*). A large proportion of moles possess a growth of more or less dense, dark, or less frequently lanugo-like, hair (*nævus pilosus*). The colour of moles varies from a *café au lait* tint to dark brown or black; occasionally, as Hutchinson has pointed out, growths precisely similar to raised moles exist without any pigment or perhaps are only a very pale fawn colour: he calls them "**white moles.**"* A very large, corrugated, cerebelliform, unpigmented growth of this kind on the side of the face, with smaller growths on the neck and chin, was sent to me by my colleague, Mr. Pollard. A very large, unpigmented, cerebriform mole, covering the occipital region, is figured and described by Mansell Moullin.†

Moles vary infinitely in size, number, and distribution. The face, neck, and back are the favourite positions. Occasionally they have a traceable nerve distribution,‡ or they may occupy the intermediate zone between two neighbouring nerve areas (Voigt's lines). Others again appear to have a metameric distribution, or that of the blood vessels, while in the majority no systematic distribution is traceable.

In number, they may amount to hundreds, scattered all over the surface, and while the majority are under half an inch, they may occupy whole regions. A distribution which has been observed in several instances§ is the lower part of the trunk

* Author's Atlas, plate lv., figs. 2 and 3.

† *Brit. Med. Jour.*, January 31st, 1891.

‡ See T. Okamura, "Zur Kenntniss der Systematisirten Nævi und ihres Ursprungs," *Archiv f. Derm. u. Syph.*, vol. lvi. (1901), p. 352. Illustrated.

§ A Peruvian boy was shown at the Westminster Aquarium with a dark hairy mole with this distribution, and Nevins-Hyde records and figures two similar instances with dermatolytic growths in *Jour. of Cut. and Ven. Dis.*,

extending higher behind than in front, and going down nearly to the lower end of the thigh, compared to the position of "bathing tights." Whether, as in lumbar hypertrichosis, there is any connection with concealed spina bifida, is worthy of investigation. They may grow in proportion to the growth of the bearer, become more prominent and hairy, but they seldom extend at the border; thus in a very extensive mole on the arm of a woman, æt. forty, sent to me by Mr. Cursham Corner,* the mother stated that up to the age of five years it was brown and smooth, and that it then began to get papillary, more prominent, and with a black horny covering, but it had never extended at the border. I have, however, seen several instances of extension of moles even in young persons, and Hutchinson † records a case where a mole on the side of the head spread at the margin in an adult. This extension is especially liable to occur in the flat moles which often cover a large area, project very slightly above the normal level, and are quadrillated by the deepened natural lines. They are usually of a pale brown colour, and in a case of Colcott Fox's ‡ occupied almost the entire vertical half of the body, like some cases of ichthyosis hystrix. In a similar case of Sequeira's, epithelioma developed at the age of forty-nine. Late in life, moles, especially if irritated in any way, are sometimes the starting-point of melanotic forms of malignant tumour. The melanotic growths are especially liable to start from moles on the foot. They were formerly called melanotic sarcoma, but J. Hutchinson junior, Unna, Gilchrist, and others § have shown that, moles are epithelial growths, and that the malignant growths therefore are cancers, not sarcomata (*vide* Melanotic Sarcoma). For this reason, a mole

vol. iii., p. 93; also a case of multiple lateral nævi in bands in *Chicago Med. Jour. and Examiner*, October, 1877. The sister of the above Peruvian boy had a still larger growth, extending from the nucha all over the back. Both she and her brother had hundreds of smaller hairy growths of all sizes scattered irregularly over the trunk, face, and limbs. A still more extraordinary case, with extensive dermatolytic growths all over the back, and nævi of all sizes elsewhere, is described and figured in Lavater's *Physiognomy*, 1848 ed., plates lxi. and lxii. See also Paget's case, *Lancet*, August, 1867; Ziemssen's *Handbook of Skin Diseases*, p. 405.

* Depicted in plate lv., fig. 1, Author's Atlas.

† Hutchinson's *Archives of Surgery*, vol. ii., No. 8, p. 366.

‡ *Brit. Jour. Derm.*, vol. ix. (1897), p. 446.

§ See a paper by Whitfield with good *résumé* of the subject, *Brit. Jour. Derm.*, vol. xii. (1900), p. 267.

which shows signs of activity in an elderly person should be removed at once.

When not too large, and if they are disfiguring from their position, moles may be removed by the knife* or caustics, not taking away the whole depth of the corium if it can be avoided. Small growths can be destroyed by electrolysis, and hairs on moles may be permanently removed by the same method.

If the hair growth is very extensive, the Röntgen rays may be used, as in such cases the disfigurement is so great that the small risk of a Röntgen ray burn may be justifiably incurred.

NÆVUS VASCULARIS.

Synonyms.—Nævus vasculosus; Nævus sanguineus;
Ger., Gefässmal.

Definition.—A congenital overgrowth of cutaneous vascular tissue.

Vascular nævi are divided into capillary or cutaneous, and venous or subcutaneous, but the latter may involve the skin as well.

Symptoms.—They present immense variety in size, from a pin's point up to a large tract, involving the greater part of a limb or region.

They are nearly always flattish, but may be on a level with the skin, or more or less raised above it; they are roundish or irregular in shape, of a uniform or lobulated surface, this depending upon whether they consist of capillaries, or large veins, or vascular sinuses, and the amount of intermediate connective tissue; their colour is from a bright red to a deep purple.

The most common seat of the **capillary nævi** is on some part of the face, head, neck, or arms, but they may come in other places. They may be very small at birth, and increase up to the size of a crown, or less; and may then either remain stationary for the rest of life, or gradually undergo involution and disappear, leaving atrophic scars, either white or pigmented. According to Depaul, one-third of the children born at the Clinique de la Faculté de

* See a case of removal of mole occupying half of the forehead by Morrant Baker in *Med. Chir. Trans.*, vol. lxi. Eve also removed a mole almost as large for a patient of mine, a young man, in whom a mole of the orbit and supra-orbital region was actually extending.

Médecine at Paris have them at birth, but most of them disappear within a month; but few authors go so far, either as to the frequency of their occurrence or their disappearance.

The capillary nævus is the most common, and is usually moderately elevated and of bright colour. Another form is of a diffuse, very slightly, if at all, raised, red, or purplish-red patch or patches on some part of the face, often involving the whole of one side; this is the well-known "**port-wine mark**," or nævus flammeus, the Feuermal of the Germans and Tache de feu of the French. In one of my cases,* it occupied the right side of the face, but on the trunk and limbs, extended over nearly three-fourths of the surface. In a case of Pollitzer,† it was punctiform and nearly universal except on the head and face.

The **venous nævus** is more raised than the capillary, often clearly defined, convex, smooth, or lobulated, of a dark purple colour, very soft, inelastic, and compressible, unless inflamed and containing cysts, but filling again immediately. Such nævi occur chiefly on the lower part of the body, about the back, nates, pudenda, and lower limbs, but are not very unusual on the neck, beneath the lower jaw. They vary from half a walnut to an orange in size; the skin over them may be normal, or there may be capillary dilatation here and there. Some of these nævi are tumescent, erectile, or pulsating.

Anatomy.—Capillary nævi are simply capillaries increased in size and number, and closely aggregated.

Venous nævi are circumscribed and composed of thin-walled veins and sinuses, bound together with delicate connective tissue, and a few small arteries which run directly into the venous sinuses, without the intervention of capillaries.

Diagnosis.—This seldom offers any difficulty, except the faint nævi which are so common on the scalp, especially in the lower occipital region, and are usually discovered accidentally. They are easily mistaken for slight degrees of inflammation, especially when their existence has not been thought of. The *prognosis* is uncertain, many of the capillary form disappearing spontaneously, but many more increase in size up to a certain point, and then remain unchanged. Others ulcerate spontaneously, beginning in the centre and spreading towards the periphery. There is no

* Author's Atlas, plate lvii., figs. 3 and 4.

† *Internat. Atlas*, Fascic. xiv., plate xlii.

pain, and the ulceration is indolent and superficial, with scanty viscid discharge, which dries up into a scab, and when this comes off a thin scar replaces the nævus tissue; in other words, the nævus is cured. According to Stephen Paget, those nævi which are only slightly raised, ill-defined, and pale, are the most likely to ulcerate. The port-wine mark is usually stationary from beginning to end, but I have known it increase,* even in adults. On the other hand, I have seen a case in which at birth there was a crimson-tinted capillary nævus which occupied almost the whole of the face below the orbit except round the mouth and chin. When between thirteen and fourteen it began to disappear, and at eighteen there was only a palm-sized patch on each side in front of the ear and a narrow band across the nose.

Treatment.—Those that are small and superficial, not in a conspicuous position, and not growing larger, may be left alone, and there is a good chance of their disappearing spontaneously, and this tendency may be assisted by painting on collodion or the liquor plumbi subacetatis, collodion, from its compressing action, being preferable, or, if over a bony part, mechanical compression may be employed. Large port-wine marks cannot be successfully dealt with. B. Squire claims that repeated linear scarification will remove them without subsequent scarring; but neither have others obtained such results, nor have two of his own cases that I have seen been successful, one after more than fifty operations showing no improvement, the mother thought, though where nitric acid had been applied there were white scars. Duhring gives very much the same verdict with regard to Sherwell's multiple puncture method. In the extensive case mentioned above, I obtained some improvement by means of electrolysis, passing a fine needle under the skin in closely arranged parallel lines. The methods employed to remove ordinary nævi come into the following categories:—
1. To produce plugging within the vessels by exciting inflammation or by electrolysis; 2. To destroy the growth by caustic or the cautery; 3. To remove it by the knife or ligature.

When the nævi are small, or in such a position on the face that the kind of scar is of importance, inflammation, electrolysis, or excision may be employed. One method is by vaccination, which answers well for nævi of moderate size, several punctures

* Francis's case of angioma serpiginosum, plate xxxiv., *Internat. Atlas*, appears to have been a growing port-wine nævus.

being made carefully, so that the lymph is not washed out by the bleeding. Another plan is to pass some fine silk threads through it in various directions, until some inflammation is excited, repeating this as often as it is necessary for the occlusion of all the vessels. Injection with perchloride of iron, chloride of zinc, or tannin is effectual, but dangerous, unless great care is employed to prevent any coagula getting into the general circulation. This may be done by isolating the growth by a ligature applied for a few minutes before and after the injection. Electrolysis is, however, preferable, as it is never advisable to run the smallest risk for such a trivial cause.

When electrolysis is employed to coagulate the blood only, the positive pole is applied by means of a flat plate of metal, covered with chamois leather well wetted with brine, and bound on to the neck or limb, while a needle attached to the negative pole is introduced into the nævus. From three to eight cells are sufficient for coagulation, but many introductions of the needle are required. Some prefer the positive pole, as its coagulating effect is greater. The needle must then be of gold or platinum, as steel needles leave a black mark. Where actual direct destruction is desired, from fourteen to twenty cells are necessary. The needle should be passed in several directions below the base of the tumour, and it should be covered with gutta-percha or shellac at the upper part, where it is in contact with the skin, to prevent ulceration. Some advocate introducing both poles into the tumour, but this is necessary only for large nævi, and then Lewis Jones's instrument is useful. Five needles, alternately positive and negative, are fixed in one handle in a straight line, no wet pad is required. The proceeding is very painful with strong currents, and with weaker ones, many repetitions of the process are generally necessary. In any case, an anæsthetic would be required, except for adults.

Superficial nævi of moderate size are often very conveniently attacked by the strongest nitric acid or the acid nitrate of mercury. This last, if carefully used, leaves a thin white cicatrix. Richardson strongly advocated sodium ethylate to be painted on to "destroy nævi painlessly." I regret to say that it has not done all that is claimed for it in my hands. It was very painful, required many applications, suppuration was produced, and although it eventually destroyed the growth, the result was no better than

nitric acid, and the process was more prolonged. The ethylate must be freshly and carefully made, great care must be exercised to keep the part quite dry, and the crust should be allowed to loosen spontaneously. Another very good plan for superficial nævi is the "Marshall Hall" method. A cataract needle is introduced close to the edge of the growth, and is pushed towards the opposite side; the needle is then nearly withdrawn, and pushed across again about one-sixteenth of an inch from the first one, and so on in radiating lines until the whole is traversed; cicatrisation sets in gradually, and spreads over the whole growth, a few cases only requiring a second operation after some months.

For more projecting nævi, my colleague, R. W. Parker, strongly recommended excision, and Lister has removed very large nævi by this method. Others prefer the ligature, as a rule, for nævi of large size. A large nævus needle is passed under the growth, and the tumour somewhat raised; another, armed with whipcord attached to it by a piece of silk, is passed under this. The armed needle is then withdrawn, and the cord drawn through with the silk; the other needle is now threaded, and the cord drawn through as it is withdrawn. The looped ends are now cut, and the cord of one pair tied tightly with the adjacent cord of another pair, so as to divide the growth into quarters. The skin must be divided by a scalpel, to allow the ligature to sink into the groove thus made, as the strangulation is rendered more complete and less painful. Other methods are described in surgical works. Some recommend puncturing in several places with the Paquelin or the galvano-cautery, and Hutchinson has used the Paquelin most successfully for very large nævi. Coates of Salisbury claims that filling the tumour by injecting *tr. iodi* into its substance is efficacious, and free from the dangers of perchloride of iron. On the whole, for most superficial nævi I think best of electrolysis or the application of the fuming acid nitrate of mercury; for those more projecting, where the position and size permit, Parker's plan of excision, now that primary union can be insured, gives the best cosmetic result, as a linear scar only results. Where expense is no object, and the repetition of the operation is not contraindicated, electrolysis may be first employed, by which the vessels are occluded, but a small fibrous lump is left, which may be excised with a smaller incision than would have been required if cut out at first. If the position or size render excision un-

suitable, either ligature or the galvano-cautery would probably be the best procedure.

No doubt, if Coates's iodine injection does all he claims for it, it would be very valuable, but I have no personal experience of it. Most of the methods would be advantageous under particular circumstances, of which the operator must form his own judgment, from what has been said.

TELANGIECTASIS.

Deriv.—τέλος, the end ; ἀγγεῖον, a vessel ; and ἑκτασις, extension.

Definition.—Acquired vascular dilatations.

Symptoms.—Telangiectasis differs mainly from nævus vascularis in its not being congenital. At the same time also, it is more often an enlargement of pre-existing vessels than a creation of new ones, and clinically resembles the slighter forms of nævus.

One of the most common forms, is that which the older authors termed **nævus araneus**, or spider nævus. It consists of a central red, raised dot, from which fine lines radiate, with occasionally cross-lines connecting the radiations, the whole forming a stellate patch about one-eighth of an inch in diameter. The prominence is an aneurismal loop of an arteriole. The radiating lines are the dilated venous radicles. The lesions, are as a rule, solitary or few in number, occurring chiefly on the cheeks near the eyelids and the bridge of the nose. I have, however, seen them in enormous * numbers all over the face, below the forehead, and on the back of the forearms and hands in a girl of seven, in whom they commenced when five years old. Fresh dilatations were still appearing even at the age of fourteen ; they gave a curious mottled look to the affected parts. Most of these differed slightly from the above description, there being no central projection, merely fine red lines, branching out quite irregularly from mere dots to an eighth of an inch across. I have met with a similar case in a girl of ten, principally occupying the region between horizontal lines drawn across the eyebrows and the end of the

* Author's Atlas, plate lxxi., fig. 1. A still more general distribution is recorded by Mandelbaum of Odessa (*Viertelj. f. Derm. u. Syph.*, vol. ix. (1882), p. 213. They were in a continuous network on the face, where it had been longest, but had begun as spots and papules, and were after nine years in that condition on the trunk and limbs.

nose ; but there were signs of fresh ones on the lower part of the face and forearms.

In another case, that of a man, they were almost confined to the right side of the face, where they were in great numbers. These lesions, singly or in small numbers, are sometimes seen on the neck and chest, and other parts ; they are most common in women and children with delicate skin, occasionally follow a slight injury, and have also been seen in a diffuse form after lightning strokes * but, as a rule, are apparently spontaneous. Stellate telangiectases are part of the symptomatology of xerodermia pigmentosa. Another form, seen chiefly in the degenerated skins of elderly, but sometimes in younger persons, consists of slightly convex or flat, hemp-seed-sized spots, raised a little above the surface, of a uniform bright crimson, or, occasionally, of purplish hue, and looking like a blood extravasation, showing no indication of their structure to the naked eye, but really consisting of a tuft of dilated capillaries. They are chiefly seen on the upper part of the trunk, neck, and face, and were called *nævus sanguineus*, but the term "nævus" is a misnomer for non-congenital growths.

Brocq † records a case of a woman of fifty-nine, in whom there were numerous telangiectatic plaques not raised above the surface on the lower extremities from one-eighth to half an inch in diameter. There was a wafer-like scale over the plaque and slight scarring in places where there had been more or less involution.

In Ullmann's and Kopp's cases, there were veritable angiomas. In Ullmann's case, there were nodules from a millet seed to a pea on the face of a woman of forty which could be emptied on pressure. In Kopp's case, the nodules were not so large, and on the scrotum, genital region, and flexor aspect of the limbs. This last case appears to resemble Fordyce's case of angiokeratoma of the scrotum (see p. 561).

The scars of Röntgen ray burns frequently display a close network of dilated vessels, and in two cases I have seen the

* See a case by G. Boner of Duns, reported in the *Lancet*, with woodcut of telangiectases on the arm only.

† *Jour. des Maladies Cutanées*, vol. ix. (1897), p. 97. The case was shown to the French Dermatological Society. He gives references to seven other cases resembling his own more or less. Ullmann, *Archiv f. Derm. u. Syph.*, vol. xxxv. (1896), p. 195 and photo. Kopp, *loc. cit.*, vol. xxxviii. (1897), p. 69. Abs. *Brit. Jour. Derm.*, vol. ix. (1897), p. 416. Abs. of Ullmann's, *Annales de Derm.*, vol. viii. (1897), p. 141.

same condition after long or repeated exposures without any breach of surface, and therefore no marked scarring, although there was some atrophic change in the skin. *Telangiectatic scarring* is, therefore, almost characteristic of Röntgen ray burns.

The only other condition that concerns the dermatologist is the dilatation of venules of the face, called **Rosacea**, or chronic venous congestion of the face, which is, as a rule, mixed up with acne, and is described with acne rosacea, but it may occur apart from that condition, as in people much exposed to the weather, such as seamen, coachmen, etc. It may occasionally occur after a single exposure to the sun, but, as a rule, it is the result of causes which lead to chronic congestion of the face or obstruction in the venous flow, whether central, as in weakly acting hearts, or peripheral, as in chronic chilling of the surface. This I have seen in a lady who was devoted to motoring. The result is, that the venous radicles become dilated and visible on the surface, especially on the nose, cheeks, and chin. The further results are described in the third stage of acne rosacea.

Schweninger has drawn attention to the occurrence of arborescent dilatations of the cutaneous vessels along the rib border of one or both sides in obese men with a feeble circulation; it also occurs when there is obstruction to the intrathoracic venous flow, and Blake calls it the athlete's girdle. Similar arborescent dilatations often occur at the border line in general, and localised sclerodermia.

Treatment.—By far the best treatment for the dilated vessels is occlusion by electrolysis, as described for removing superfluous hairs. In the so-called nævus araneus, the point of the negative pole needle is inserted into the central projection, and a current of about three cells transmitted. Slight frothing ensues; the skin just round the needle blanches, while beyond, it is reddened. The needle must only be kept in three or four seconds, or there will be a mark. The dilated venous radicles may be occluded in a similar way, as described under acne rosacea.

ANGIOMA SERPIGINOSUM.

Synonyms.—Infective angioma* ; Nævus lupus.

Definition.—A disease in which minute vascular points are formed in rings or other groups, which spread at the borders, while fresh points are continually developing beyond them.

This disease is very rare, and was first described by Hutchinson.† Other cases have been met with by Jamieson, Lassar, Waren Tay, J. C. White, Leslie Roberts, Majocchi, and myself.

The disease consists of minute, bright red, vascular points imbedded in the skin, “like grains of cayenne pepper.” These are formed into small groups, which spread peripherally, clearing in the centre, and thus forming rings not exceeding half an inch or so across, but in the border, the vascular dot character of the components of the ring is always preserved. Fresh points are continually developing a little beyond the patches (“infective satellites,” as Hutchinson calls them), and thus the process is continually repeated, and, the rings meeting, large areas of disease with gyrate borders are produced. Scattered “cayenne pepper” dots, and lines of them, are seen beyond the main patches, and

* I have ventured to give another descriptive adjective than that of Hutchinson, since his word “infective” would have to be rendered “Contagiosum,” and thus convey a false notion, which he himself did not intend, the word “infective” here only indicating the infective influence on adjacent tissues.

† *Literature.*—The first four cases are described in Hutchinson's *Archives of Surgery*. In describing Waren Tay's case, he gives references to the rest. Vol. iii. (1891), p. 166, illustrated (plate ix.). Compare with plates xiii. and xiv., which he calls lupus marginatus. These cases are republished in his smaller Atlas with the same numbers. J. C. White, *Amer. Jour. Cut. Dis.*, vol. xii. (1894), p. 505, with illustrations of microscopical appearances. Leslie Roberts, *Brit. Jour. Derm.*, vol. ix. (1897), p. 180, with histology. Francis's case, “A Rare Form of Angioma Serpiginosum,” *Internal. Atlas*, plate xxxiv., appears to be a growing capillary nævus of the “port wine” character. David Walsh's case, Hutchinson's *Arch.*, vol. viii. (1897), plate 143, was in arborescent lines, it spread down one arm and all over the body, leaving slight scarring, *Brit. Jour. Derm.*, vol. x. (1898), p. 18. It was a remarkable serpiginous angioma, but quite different from the text cases. Morgan Dockrell, *Med. Soc. Trans.*, vol. xxi. (1898), p. 654, records a case under this title in which the telangiectatic vessels began at three months old, persisted until he was sixteen years, and then disappeared, leaving scars ; but the description is insufficient for exact identification.

the skin between the rings is generally pinkish in hue ; in Tay's case, the ringed arrangement was but slightly indicated, and there was no definite grouping. The dots vary from the diameter of an ordinary pin's head, to some so small as only to be visible with a lens. Most of them are bright, and pale on pressure, but the larger-sized ones are purplish in hue and often unaltered by pressure. In three out of the first four cases, scarring was certainly absent, and Hutchinson was not sure about it in the fourth case. This case began at the back of the arm, and spread up and down the limb to the shoulder and to below the elbow. Jamieson's case began on the front of the right forearm, and spread over the front and back of the arm and forearm, up to the deltoid, and down to the radial side of the wrist and back of the hand, to the root of the thumb and forefinger. There were also several groups along the inferior margin of the fifth rib on the right side, from one inch inside the nipple, to the right border of the sternum. Lassar's case began on both cheeks and increased to the size of a florin ; a few groups came on the ears, and later, on the right upper limb, and extended from the humerus to the back of the right hand in eight weeks. Tay's case began on the right calf, and spread nearly all over the leg, and another patch formed on the front of the thigh. The left limb was less affected. The disease tends to spread but very slowly, as a rule, though Lassar's case, as far as the arm was concerned, was a marked exception. There are periods of comparative quiescence and activity.

In Leslie Roberts's case, a girl, æt. fifteen, it began on the leg when four years old, and spread from ankle to buttock in countless vascular puncta in circular and crescentic clusters. She was born with a nævus on her lip.

In White's case, there was a purplish-red mark at birth below the right scapula ; it increased slightly, but it was not until he was four years old that "satellites" appeared. It formed when the boy was seen, æt. twelve years, a belt three inches wide, extending for six inches from the right scapula towards the nipple. There were about two dozen lesions from a pin's head to two-inch circles. There was no scarring, only purplish discoloration inside the circles.

In my own case, a pregnant woman of twenty-one, the face only was affected. It began two months before I saw her on the

right cheek, then appeared on the forehead, where there were three circles about three-quarters of an inch in diameter made up of punctiform vascular dots. There were two on the left cheek, two over the lower jaw, and two small groups on the right cheek. There was no scarring even where the original patch on the right side had faded, except a few puncta, and left the skin white.

Etiology.—Three out of the first four developed under two years of age, and all these three were girls. Jamieson's case developed in a boy, æt. fifteen years, after gymnastic exercises; Hutchinson's developed from a small port-wine mark soon after birth; Lassar's case after convulsions connected with dentition; and Tay's case without apparent cause when two years old. White's case started from a nævus. In my own case, there was mitral disease. Of the six cases, therefore, three started where there was pre-existing nævus and three under circumstances suggestive of vascular strain.

Pathology.—Its pathology is unknown. Hutchinson considers it a sort of lupus and allied to lymphangiectodes or lymphatic lupus, as he terms it, because both begin in early life, spread at the edge, and have satellites, and any disease with these phenomena comes under his definition of the lupus family, but these views are not generally accepted as regards lupus in general. Lassar, however, described his case as a form of lupus erythematosus.

Anatomy.—Jamieson's case was examined by Edington, who found the epidermis normal, except that the interpapillary processes of the rete went deep into the corium. The vascular loops at the apices of the papillæ were dilated into wide spaces, some still with blood in them. Anatomically, he considered that the condition was that of a superficial nævus. Councilman and Bowen, who examined White's case, concluded that there was first a growth of the endothelium and perithelium of the vessels of the corium, and along with this a formation of new vessels both of them; and Darier, who also examined sections, regarded it as an angio-sarcoma of special type. Majocchi* found the ectasic capillaries round the follicular orifices. Leslie Roberts only found spaces formed by dilated vessels.

Diagnosis.—This can scarcely offer any difficulty. The commencement some time after birth at once shows it is no mere birth-mark, and its punctiform character in groups, rings, lines, or single dots, and tendency to spread in an annular manner, with

* I have only seen a short abstract of this case in the *Monatsh.* Majocchi called it, "Telangiectasis follicularis annulata," "an undescribed dermatosis."

the continual formation of fresh foci beyond the main patch, stamp it as something peculiar. The stellate telangiectases, which occur at all ages and may be very numerous, are distinguished not only by their branched character, but by the absence of any serpiginous tendency. Though compared by Hutchinson to lymphangiectodes, that only refers to the mode of development, as their physical characters are quite different, except that some telangiectases are often present along with the vesicles in that condition.

Treatment.—The treatment hitherto tried has been unsuccessful, the disease spreading in spite of the measures adopted. I should be inclined to try electrolysis along the border of the affected area, and so produce occlusion of as many vessels as possible along the spreading edge and in the outlying puncta.

LYMPHANGIECTASIS AND LYMPHANGIOMATA.*

These two conditions, as Unna has pointed out, frequently merge into each other, for the latter is always accompanied by the former, and even in lymphangiectasis there is endothelial proliferation. Lymphangioma, Unna considers, is comparable to varicosity of the blood vessels rather than to true hæmangioma.

There are two superficial forms of dermatological interest, lymphangiectasis, the lymphangioma superficiale of Unna, in which pale elastic elevations appear on the skin, which may become so superficial as to be bluish, and translucent, or actually vesicular and transparent; if these vesicles or nodules are punctured or ruptured, lymph flows from them in large quantities, and the discharge may go on for hours. This condition is really the only visible change in the skin, and Heuss's, Epstein's, G. J. Elliot's, White's, and Pringle's cases and one of my own are examples, and many more might be cited. It is due to a superficial erysipelatous, or other inflammation or the consequence of a traumatism. More frequently the condition is associated with

* Unna's *Histopathology*, p. 919-933. *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. x. (1892), p. 213, illustrated. Vol. xiii. (1894), p. 137, for Elliot's case, and vol. xvi. (1898), p. 67, for White's case. *Priv. Notes, L.*, p. 141. A gentleman, æt. forty-two, thirteen years before, had a sudden attack of lymphangitis in the forearm with great swelling which never quite subsided, and during the last nine months had had minute closely aggregated vesicles at the wrist, which never went away, and were fuller in hot weather.

lipomata or elephantiasis, either congenital, as in elephantiasis congenita lymphangiectodes, or acquired, either in the tropical or home form of elephantiasis.

The second superficial form is described here under the title of lymphangiectodes, because it was the original name given by Tilbury Fox, and still represents as much of the pathology as lymphangioma does. Unna's lymphangioma of the hypoderm rests on Pospelow's case of so-called lymphangioma tuberosum multiplex, which will be further alluded to in the description of the disease originally described by Kaposi under that title, and adhered to here, as its pathology is still a matter of discussion, though the tendency is not to admit that it is a lymphangioma.

Cystic lymphangioma is the hygroma of surgeons, and does not concern the dermatologists; Dale James's case* was an interesting variety.

For further discussions on lymphangiomata, the papers of Francis and Leslie Roberts† may be read.

LYMPHANGIECTODES.‡

Deriv.—*λυμφανγία*, lymph vessels; *ἐκτασίς*, dilatation.

Synonyms.—Lymphangioma circumscriptum (M. Morris); Lupus lymphaticus (Hutchinson); Lymphangioma capillare varicosum (Török); Lymphangioma cavernosum (Besnier); Angiome cystique (De Smet and Bock).

Definition.—A localised disease consisting of closely crowded, deep-seated vesicles supposed to be connected with the lymphatics.

This is a rare disease, which was first described by English authors. Tilbury Fox first, then Hutchinson, described cases,

* Read before Sheffield Med. Chir. Soc., *Lancet*, February 28th, 1891.

† *Brit. Jour. of Derm.*, vol. v. (1893), pp. 4, 65, and 364.

‡ *Literature.*—T. and C. Fox, "Lymphangiectodes," *Path. Trans.*, vol. xxx. (1879), p. 470, with histology—a complicated case. Hoggan also gives histology of this case, *Jour. of Anatomy and Physiology*, vol. xviii. (1884), p. 322. Hutchinson, "Lupus Lymphaticus," two cases, *Path. Trans.*, vol. xxxi. (1880), p. 342, with two excellent coloured plates and very good clinical account, with histology by Sangster—these two and another are reproduced in plates xv. and xvi., vol. i., *Archives of Surgery*. Hutchinson jun., "Histology," *Path. Trans.*, vol. xxxv. (1885), p. 467, with plate. Köbner, *Berlin Med. Soc.*, 1883; reported fully in *Ann. de Derm. et de Syph.*, vol. v.

but of late so many have been published that it is no longer necessary to particularise them. Eight cases have occurred in my own practice.

Tilbury Fox's and Besnier-Vidal's cases were complicated with venous nævus; Köbner's was described as a case of cavernous angioma, lymphangioma, and neuro-fibroma; and in Dale James's case also, the vesicles were seated on a fibro-cavernous structure; the uncomplicated cases resemble each other very closely.

Symptoms.—The disease consists of minute, deep-seated vesicles, like frog-spawn. They are closely crowded together in irregularly outlined groups of from one-third to three-quarters of an inch in size, and these again are arranged irregularly with healthy skin between them, or with only a few scattered vesicles on it. They are usually in a single patch from one to three inches in diameter, or at least confined to one region, of which the following areas are on record: the face, lip, neck, deltoid and scapular regions, the axillæ, the arm, leg, thigh, buttock, trunk, groin, and vulva. In Corbett's case, it formed a half-inch band from the middle of the thigh behind to the tendo Achillis, and thence under the external malleolus it broadened and ended on the middle and inner margin of the foot, the majority have occurred on the left side. The *mucous membranes* may be attacked, the tongue* most frequently; in Brocq's the tongue and soft palate; in Schmidt's the upper, and in my own the lower lip,† was affected in association with lupus vulgaris of the face; Doutrelepon has met with a similar combination; in Walsh's, the palpebral conjunctiva; in Leroux's, the buccal mucous membrane; in Heuss's, the in- as well as the outside of the labia vulvæ. Probably no part of the skin or mucous membrane is absolutely exempt, but the most common positions are the side of the neck, the scapulæ, axillæ,

(1885), p. 293. Morris's case, plate i., *International Atlas*. My own Atlas, plate lxxiv., four cases. A. G. Francis, *Brit. Jour. of Derm.*, vol. v. (1893), pp. 4, 65, and 364, several new cases and good *résumé* of old. Brocq and Bernard, *Annales de Derm. et de Syph.*, vol. ix. (1898), p. 305, gives nearly all the references and critical review. *Kaposi*, Besnier-Doyon, vol. ii., p. 378, notes by translators. H. Schnabel, *Archiv f. Derm.*, vol. lxi. (1901), p. 177, histological plates and many references.

* Butlin, *Diseases of the Tongue*, 1885. Plate vii., coloured, reported as a degenerated nævus. Hutchinson's smaller Atlas, plate lxxxvi. Brocq, *loc. cit.*, gives references to seven cases.

† Atlas, plate lxxiv., fig. 4.

and sides of the trunk, on the skin and the dorsum of the tongue, on mucous membranes.

The vesicles are not of the ordinary kind, being deep-seated, with thick walls, and some of them are almost warty-looking. The majority are about the size of a small pin's head, but they vary from the smallest recognisable up to a large hemp seed. They are either perfectly colourless, or have a straw or pinkish tinge, and if pricked, emit a clear, colourless fluid of alkaline reaction, containing a few lymph corpuscles. Some have vascular striæ or tufts over them, others have red dots, others again evidently contain extravasated blood, and even external hæmorrhage may occur in places like the axilla, the result usually of friction or other trifling injury. In one of Hutchinson's unpublished cases, nearly all the vesicles had vascular tufts obscuring the vesicular character. In one of my cases, these vessels were conspicuous during the development of fresh vesicles, and disappeared subsequently. Verrucose projections with horny concretions are sometimes present. There are no inflammatory or subjective symptoms as part of the disease, but J. C White's case had had frequent attacks of dermatitis and Hutchinson also speaks of their liability to erysipelatoid inflammation. The disease is extremely chronic in its course, lasting for an indefinite number of years, if not interfered with, spreading slowly at the periphery by the formation of fresh groups of vesicles, and with great tendency to recur after partial or apparently complete removal. In the second of my cases, æt. thirteen, the disease had only been noticed a month, and appeared on or near some scars produced by the removal during infancy of a congenital tumour, which the mother said was not like the present disease, but there must have been several growths, judging by the scars over the left ribs.

Etiology.—Sex appears to have no influence. Nearly all have begun in childhood, a few in early infancy; one of mine began when six months old, and one or two have been possibly congenitally present, and all are probably of congenital origin. Several have been associated with venous nævus, and Besnier attaches great etiological and pathological importance to this.

Pathology.—All but Besnier and De Smet and Bock regard it as of lymphatic origin, and that the main features are overgrowth and dilatation of the lymphatic vessels; of congenital origin and comparable to blood vascular nævi; but when one comes to

details, the variety of nomenclature indicates the variety of opinion. De Smet and Bock consider that the vesicles are serous cysts derived from the arterial capillaries of the papillary body. Török, whilst convinced that the change is mainly lymphatic, admits that the blood vessels take part in the process, a view confirmed by its occasional association with blood-vessel nævi. The varying number of dilated blood vessels at different periods perhaps explains some of the discrepancy. Brocq* considers it to be a neoplasia of the lymphatic vessels. All are now agreed that there is overgrowth as well as dilatation. Hutchinson's view that it is a kind of lupus is not accepted by any one except his son, but he uses the term in a special clinical sense, rather than to imply that it has any relationship to lupus vulgaris.

Anatomy.—The histology has been investigated by T. and C. Fox, Sangster, Hutchinson jun., Török, Schmidt, De Smet and Bock, Jacquet, Heuss, Francis, Roberts, Freudweiler, Brocq, Gilchrist, etc. All are agreed in the presence of cysts of various size, chiefly in the papillary, but also in the deep part of the cutis, and sometimes deeper still. For further details see the references.

Diagnosis.—Its commencement in early childhood, its slow but continuous progression, the congeries of small, thick-walled, warty-looking vesicles in the cutis, their straw colour, with vascular striæ, and their limitation to one region, are the most distinguishing features, which, once seen, could scarcely be mistaken for those of any other affection, except cases of lymphangiectasis like those of Epstein and Elliot, † from which it might be distinguished by the continued lymphorrhagia when a vesicle of the latter disease is punctured, and probably also that such cases may not be restricted to one region.

Prognosis.—There are too few cases on record to speak decisively; as far as we know, spontaneous disappearance is not to be looked for, and even after apparent destruction it has returned.

* Brocq, *loc. cit.*, discusses in detail the pros and cons. of the blood or lymph vessel origin of the disease, and is a good contribution to the pathology of the affection.

† Case of lymphangioma, *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. x., p. 213, illustrated, also G. T. Elliot, *Amer. Jour. Cut. Dis.*, vol. xii. (1894), p. 137. Fox and Hoggan, *loc. cit.* J. C. and C. J. White, *Amer. Jour. Cut. Dis.*, vol. xvi. (1898), p. 67, and many other such cases are scattered through medical literature.

Treatment.—Destruction by caustic or excision has been practised, but not always with success, as recurrence often took place near the cicatrix. In one of my own cases, the greater part had been destroyed by caustics a year before I saw it, but many fresh groups had appeared on and round the scars of previous operations. I tried electrolysis; each vesicle was pierced by the needle attached to the negative pole, and eight to ten cells were employed; the result was satisfactory for some time, but there was partial recurrence three years later. Still, unless excision could be accomplished going widely beyond the visible disease, electrolysis is probably the best plan, if it is interfered with at all.

LYMPHANGIOMA TUBEROSUM MULTIPLEX.*

Synonyms.—Eruptive Hydradenoma (Jacquet-Darier); Adenoid epithelioma of the sweat glands (ditto); Syringo-cystadenoma (Török); Syringadenoma or syringoma (Unna); Cystic eruptive epithelial celluloma (Quinquaud); Benign cystic epithelioma (Jacquet); Benign epithelioma with colloid degeneration (Philippson); Benign epithelial cystadenoma and cystic epithelial nævi (Besnier); Endothelioma tuberosum multiplex colloides (Kromayer); Syringo-cystoma (Neumann); Hæmangio-endothelioma tuberosum multiplex (Jarisch).

Kaposi was the first to describe a case of this rare disease from Hebra's clinic, and the name he gave it stands, therefore, at the head of this article on the score of priority, but not as representing the true nature of the growths, as it is worse than useless to change it until more general agreement is obtained as to the pathology of the affection, than the farrago of synonyms indicates to be now the case.

* *Literature.*—Hebra's *Atlas*, Lief. x., Tafel 6. Hebra, vol. iii., p. 387. *Syd. Soc. Trans.* "Hydradénomes éruptifs," Jacquet et Darier, *Annales de Derm. et de Syph.* (1887), p. 317. Pièce No. 1175 du Musée de l'Hôpital St. Louis (1886). "Syringo-Cystadenom," L. Torok, *Monatshefte f. prakt. Derm.*, vol. viii. (1889), p. 116. "Die Beziehungen des Kolloid Milium (E. Wagner) und des Hydradenom (Darier-Jacquet) zueinander," L. Philippson, *Monatshefte f. prakt. Derm.*, vol. xi. (1890), No. 1, and English Trans., *Brit. Jour. Derm.*, vol. iii. (1891), p. 35. "Cellulome épithélial éruptif," Quinquaud, *Comptes Rendus* (Paris: 1890), p. 412, *Congrès Int. de Derm.* (Paris: 1889). "Épithéliome kystique bénin de la peau," Jacquet, *loc. cit.*, p. 416. "Lymphangioma Tuberosum Multiplex," Lesser and Beneke, *Virchow's Arch.*, 1891,

Including one of my own, about a score of cases are known besides those of Pospelow, Van Harlingen, and Leslie Roberts, which will be considered separately.

In the majority of the cases, the lesions occupy the front and sides of the trunk, generally appearing under the clavicle, where they are always most abundant, and extending more or less downwards, reaching, in the Hebra-Kaposi case all over the front of the body; if it extends upwards, the neck, and perhaps even the lower part of the face, is reached, while in Quinquaud's and Philippson's cases the forehead and orbits were affected and the lower part of the face was free. In Jarisch's case, the orbits only were involved. Posteriorly it seldom extends further than from the hair line to the nucha; both segments of the upper limbs, and the upper segments of the lower limbs have been sparsely involved.

The lesions are discrete, crowded in some parts without definite grouping, but with a slight tendency to an arrangement in oblique lines from the clavicles to the sternum, apparently following Langer's lines of cleavage. Individually they are convex, roundish, or oval, rather firm nodules, imbedded in the skin, not very well defined, and only slightly raised above the surface. They range in size from a pin's head to a small pea, or occasionally as large as a bean. In colour, they are pink, brownish or reddish-yellow, slightly paler on pressure, while the small ones are often the colour of the normal skin. The surface is smooth to the naked eye, but with a lens, fine corrugations most marked at the border can be seen (on the larger growths). Telangiectases on them are exceptional. On many of them one or more yellowish or translucent milia can be found, or they may occur

Heft 1. "Zur Lehre von den Haut-geschwulsten (Hæmangio-endothelioma)," Jarisch, *Arch. f. Derm. u. Syph.*, vol. xxviii. (1894), p. 164. "Endothelioma Tuberosum Colloides," Kromayer, Virchow's *Arch.*, Bd. cxxxix., p. 282. "Epithéliomes Kystiques bénins," Brocq, *Annales de Derm. et de Syph.*, vol. viii. (1887), p. 289. "Hæmangio-Endothelioma Tuberosum Multiplex," by Hugo Gutti, of Breslau; reprint Braumüller, 1900, from Kaposi's *Festschrift*. "Hæmangio-Endothelioma Tuberosum Multiplex," and "Hæmangio-Sarcoma Cutis," M. Wolters, *Archiv f. Derm. u. Syph.*, September, 1900, p. 269. Abs. in *Brit. Jour. Derm.*, vol. xiii. (1901), p. 75. Five cases by A. Gossman in October and November Nos. of *Archiv* (1901), p. 177. He calls them Nævi Cyst-Epitheliomatosis Disseminati. Abs. *Brit. Jour. Derm.*, vol. xiv. (1902), p. 191. A new case by the author, *Clin. Soc. Trans.*, vol. xxxii., 1899. Coloured plate and references to date.

separately. Sensory symptoms are quite absent as a rule, but Kaposi spoke of them as being slightly painful.

They generally commence in childhood or adolescence, and slowly increase in numbers, and still more gradually in size, and show no tendency to involution. A case of Hallopeau's, very unlike the rest, developed true epithelioma; the primary lesions were yellow rounded firm nodules on the eyelids of a man, and dated from infancy.

Anatomically, in the centre of the derma are cysts of various size, lined with flat nucleated epithelium, and from most of these proceed straight or winding duct-like cylinders of epithelial cells, of about the same thickness as a sweat-gland duct. By the accumulation of epithelium, and subsequently hyaline degeneration, these pseudo-ducts may become dilated into cysts, some of which are isolated in the derma without any process belonging to them.

When authors tried to read the pathogenetic meaning into these anatomical facts, difficulties began. Kaposi thought they were lymphangiomatous cysts, "Darier and Jacquet first thought that they were adenoid growths from the sweat glands, then that they were sweat gland epitheliomas, Quinquaud and Jacquet that they were benign cystic epitheliomas," Kromayer and Jarisch that they were endotheliomas derived from the blood vessels; Gutti and Wolters also consider them to be hæmangio-endotheliomata. Török suggested that they develop from embryonic portions of sweat glands in accordance with Cohnheim's theory, and this seems a feasible idea, and his name, syringocyst-adenoma, is the least clumsy and objectionable of the names proposed. As, however, his idea has not been proved, and the majority of observers derive them from the blood vessel endotheliomas, it is better to retain for the present the original designation, and at least we shall then know on what peg to hang these rare cases as they arise. The milium so often present is also, no doubt, of embryonic origin, as Robinson first showed was often the case with these white fatty bodies.

Diagnosis.—The diagnosis should not be difficult as a rule; their slow development generally dating from the second decade of life; their predominance on, and perhaps limitation to, the upper part of the front and sides of the chest; the colour being from normal to reddish or yellowish-brown; their size from a pin's head to a pea; the arrangement in oblique rows; the firm

consistence and neoplastic character, with absence of sensory symptoms—would be the most distinguishing features, and no other disease presents similar appearances, except epithelioma adenoides cysticum. The comparison between the two will be made under the latter affection, in which also the prognosis and treatment is identical, and will, therefore, not be discussed here.

There remain Pospelow's * and Van Harlingen's † cases, which are reported as instances of lymphangioma tuberosum cutis, and a case related and identified by Leslie Roberts ‡ as of the same character.

No one can read these cases carefully without being struck by their resemblance to each other, and to some cases of fibroma; and since Van Harlingen now admits that his case was probably a fibroma, further discussion is unnecessary.

EPITHELIOMA ADENOIDES CYSTICUM (Brooke).§

Synonyms.—Adenoma of sweat glands (Perry); Multiple benign cystic epithelioma (Fordyce); Hæmangio-endothelioma tuberosum multiplex (Jarisch); Acanthoma adenoides cysticum (Unna).

This is an equally rare disease with lymphangioma tuberosum multiplex, with which it presents many resemblances and analogies, but as there are some important differences, they are kept apart, at all events for the present.

The lesions are for the most part on the face, and include Perry's case, which may be taken as the type; the Brooke and Fordyce series, Balzer and Ménétrier's case, and || a few others.

In adopting Brooke's name, epithelioma, I have been guided by the fact that it is the one most widely accepted, but the generic

* Pospelow, *Viertelj. f. Derm. u. Syph.*, vol. vi. (1879), p. 521.

† Van Harlingen, *Amer. Derm. Soc. Trans.*, 1881, and *Manual of Diseases of the Skin*, 2nd ed., 1889, p. 299.

‡ Leslie Roberts, *Brit. Jour. Derm.*, vol. viii. (1896), p. 312.

§ *Literature.*—Perry's case, *International Atlas*, part iii., plate ix.—a good representation. Brooke, *Brit. Jour. Derm.*, vol. iv. (1892), p. 269—a good article and references to date, and four new cases. Fordyce, *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. x. (1892). Kromayer, *Virch. Arch.*, vol. cxxxix.

|| Balzer and Ménétrier, "Adenoid of the Sebaceous Glands of the Face and Scalp," *Arch. de Physiol.*, 1885, p. 515, quoted in Unna's *Histopathology*, p. 1124.

term epithelioma is used in a wide, and in this instance benign sense, indicative of the supposed derivation of the growths from the epidermis.

In Perry's case, the lesions were limited to the face and scalp in closely aggregated groups about the centre and sides of the forehead, the root of the nose and inner canthi, the cheek and upper lip close to the nose, and the lower lip, except as regards the forehead, having very nearly the distribution of a marked case of adenoma sebaceum, which it resembled, except that the lesions were white, and had no telangiectases, but this latter feature was to a slight extent present in Fordyce's cases (a mother and daughter). In Philipppson's first case, the nodules were limited to the lower eyelids, the colour of the normal skin, but translucent and only distinguished by the microscope from colloid milium.

In Brooke's four cases (three in one family), the face was like Perry's case, but one, in addition, had them on the back of the neck, the upper third of the back, and very marked in the interscapular region. In another, there were more on the back than the front, and the scalp was much affected, but the hair grew on the lesions. The colour was normal or with a slightly bluish-yellow tint. In Fordyce's cases, some of the lesions were pearly, and translucent with some telangiectases, and the lesions were less crowded than in the other cases.

It is probable that Jamieson's* and Rosenthal's† cases, described as adenoma sebaceum, were really instances of this disease of the Perry type. In J. C. White's‡ case, a woman of forty-two, the lesions began on the face at the age of twenty-four. They were sparse then and numbered about fifty when White saw her, though they had continued to develop up to the age of forty-two. Some softened and were removed by caustics during the last ten years; three of them developed epithelioma. Bowen examined some of the lesions microscopically, and considered that they were identical with those of Fordyce's cases, but there were obvious clinical differences.

Wolters's§ case was a woman of twenty, in whose right eyebrow

* Jamieson, *Brit. Jour. Derm.*, vol. v. (1893), p. 138.

† Rosenthal, Berlin Derm. Soc., reported in *Annales de Derm. et de Syph.*, vol. v. (1894), p. 1151.

‡ *Amer. Jour. Cut. Dis.*, vol. xii. (1894), p. 477, with good photograph.

§ Wolters, *Archiv f. Derm. u. Syph.*, April and May, 1901, pp. 89 and 197.

was a yellowish-red-coloured linseed-sized tumour, which had been present since birth. The diagnosis was made from the histology corresponding with Brooke's disease.

Elsching* at Vienna showed two sisters, æt. twenty-six and twenty-nine, with numerous whitish-yellow flat pin's-head to lentil-sized neoplasms on the lower eyelids, which they from their histology considered as lympho-endotheliomata.

Jarisch's case was a man, æt. twenty-two, in whom the disease began at the age of eight. There were several ulcerated and crusted plaques situated about the orbits, and one near the nose, which looked like rodent ulcers. There were a few nodules and yellowish milium on the eyelids. Microscopically, Jarisch said they resembled Brooke's cases, but with such clinical differences it would be better to suspend judgment.

W. Pick's† was in a man of forty-three, with a few (9) scattered lesions on the forehead and orbits.

Isadore Dyer's,‡ a man of fifty-five, in whom the disease began at eighteen on the left temple, and gradually increased on the face, neck, chest, and back, and were both grouped and scattered from a pin's head to a pea, and a few as large as half a nut; the newer ones were like white wax, the older violaceous.

Etiologically the disease shows heredity and family prevalence in a large proportion of the cases. The female sex predominates so largely that male cases should be carefully scrutinised before they are accepted as being of the Perry type, especially as those reported by Jarisch, Pick, and Dyer present important clinical differences.

Anatomy.—Brooke and Fordyce independently traced the growths from the epidermis epithelium, and consider them to be benign epitheliomata, while Jarisch and others have derived them from vascular or lymphatic endothelium, and would therefore class them as endotheliomata. Most subsequent observers, however, including Unna, who calls it an acanthoma, and Wolters, confirm Brooke and Fordyce.

Pathologically there is a general agreement that they are of embryonic origin.

* Elsching reported *Annales*, vol. ix. (1898), p. 1059.

† In vol. lviii. (1901), p. 201, W. Pick records as adeno-epithelioma what he claims to be another case. He mixes up cases of adenoma sebaceum, colloid, etc., in his references.

‡ Isadore Dyer, *New Orleans Med. and Surg. Jour.*, March, 1898, p. 530.

Diagnosis.—These cases resemble either adenoma sebaceum when abundant, or sometimes colloid when limited to the orbits. The distribution and aggregation may be exactly like adenoma sebaceum, except on the forehead, where the growths are sparse in adenoma sebaceum, while in the other they are closely grouped for the most part; the colour chiefly due to telangiectases is usually bright red in adenoma, while in epithelioma adenoides the growths are pale and even white, and if there are telangiectases, they are not nearly so numerous and do not give the ruddy coloration of adenoma. When they are on the orbit they may be yellowish and semi-transparent, and then are like colloid. In a few cases, chiefly when the growths are sparse, the microscope would have to decide the question. The following comparison may be made with lymphangioma tuberosum.

LYMPHANGIOMA TUBEROSUM
MULTIPLEX.

Mainly on the trunk, discrete and not grouped. Bilateral, but not symmetrical. Distinctly coloured, except quite at the commencement. Scalp unaffected.

Males and females equal.

Not hereditary.

Anatomically. Cysts in the derma with straight processes of non-epidermic origin.

EPITHELIOMA ADENOIDES
CYSTICUM.

Mainly on the face, discrete but very closely grouped. Closely symmetrical. Almost or quite pearly white throughout, or a faint bluish or yellowish tinge. Scalp several times affected with large and numerous lesions.

Females largely predominate.

Most of them hereditary.

Solid coil-like masses with small cysts scattered through them, and of epidermic origin.

Resemblances.—Both begin in early life, both encroach to an extent on the other's domain of distribution, both have milium on and between the lesions, both probably are of embryonic origin, slowly progressive, and do not involute. The cases of each type closely resemble each other.

Prognosis.—In both lymphangioma tuberosum and epithelioma adenoides cysticum the tendency is to slowly increase in number and size. Spontaneous evolution cannot be expected.

Treatment.—Operative measures are the only means of removing the growths. Electrolysis may be used to destroy them if the growths are in small numbers, but when numerous, curetting is probably the best means of removal; but a fine Paquelin or galvano-cautery might be used.

In a face case, Fordyce removed the majority of the larger tumours by the curette, and smaller one with a comedo-extractor. When the epidermis was broken, the tumours being loosely attached were readily extracted, leaving a slight scar.

Benign epitheliomata of different clinical characters are reported from time to time. One such, by myself, was published in the *Transactions of the Pathological Society* for 1899. The patient was a girl of ten, who had an aggregation of tumours single and compound, the single ones varying from a hemp seed to a pea, while the largest compound one occupied a square inch. They formed a vertical band an inch wide, extending from the middle of the right eyebrow to about an inch beyond the hair margin. The growths were soft to the touch, pale red, with a few vessels over the largest; they were neither tender nor painful. There was a doubtful history of a blow before the appearance of the growths, which began when she was between three and four years, and some of which were still growing slowly. While the general clinical features were benign, the microscopical characters suggested malignancy, and showed very active proliferation of the epithelial cells of the hair follicles and sweat ducts, but not of the sweat coils, sebaceous glands, or of the epidermis. The growths were probably of embryonic origin, as the hair follicles and sebaceous glands were imperfectly developed.

ADENOMA SEBACEUM.*

Synonyms.—Végétations vasculaires (Rayer); Nævi vasculaires et papillaires (Vidal). Nævi symétriques de la face (Hallopeau-Leredde).

Definition.—Neoplastic papules on the face, of congenital origin, but of later development.

* *Literature.*— Author's Atlas, plate lxxxvii. Rayer's Treatise, second edition; Willis's Trans., p. 996, cases clxxiv. and clxxv.; and *Atlas*, plate xx., fig. 1. Addison and Gull on Vitiligoidea, *Guy's Hospital Reports*, series ii., vol. vii. (1850), p. 267, and No. 262 model, Guy's Museum, labelled "Lichen." Pringle, *Brit. Jour. Derm.*, vol. iii. (1891), p. 1, a good *résumé* of the subject, with coloured plate, gives all the French cases. Caspary, *Archiv f. Derm. u. Syph.*, vol. xxiii. (1891), p. 371, with coloured plate. Internat. Derm. Cong., Vienna, 1892—seven new cases by myself. There are several models in the St. Louis Museum.

Rayer and Addison and Gull related the first cases, but it was not generally identified until the above designation was given by Balzer, who was the first to redescribe the affection without knowing of the previous cases. The cases now known are too numerous to be specially mentioned. I have met with several, and I could easily find many more, by visiting the idiot asylums, in which most of the cases are confined. The affection is, therefore, not so rare as it was at first considered to be, as the majority pass unrecognised into the hands of the neurologist rather than those of the dermatologist.

The disease is practically confined to the face, occupying in the main, the position of acne rosacea, *i.e.*, the middle two-thirds. It is most abundant along the sides of the nose and the nasolabial folds, where it is semi-confluent in most cases; it is least on the forehead, where the lesions are scattered sparsely and without any arrangement, and some of the largest papules are often found here. The chin and sides of the cheeks occupy an intermediate position as far as the number of the papules is concerned. Their distribution is remarkably symmetrical as a rule, but one of my cases was strictly unilateral in the usual position, and another over the lower jaw and outer side of the right cheek, while in Gaucher and Lacapère's case, the disease was limited to a score of papules on the left temple, which began at the age of forty-eight.

The lesions are roundish, convex papules, and most of them are from a millet to a hemp seed in size, but the extremes are a pin's point to a split pea. The majority of the lesions are of a bright crimson, from minute telangiectic vessels on and round them, but they may be quite colourless and slightly translucent, like little wax nodules, while on the forehead I have seen them of a brownish-red tint. They do not all pale on pressure, and the telangiectases vary much in extent, sometimes being almost absent, at others very abundant, in tufts and stars, and imparting a uniform red colour. One of my cases corresponded to the last description, and Vidal's designation for the disease shows what a striking feature it was in his case. In my unilateral cases there was very little vascularity.

In one case, the papules were so small and insignificant, that if it had not been for the telangiectases, they would have escaped my observation, the man having applied for a seborrhœic

eruption on the trunk ; he was a bright, intelligent, healthy-looking man of twenty-six.

A few of the lesions may be present at birth, or appear in very early life, and the others either appear gradually, or at some period such as puberty, and take on marked activity as to numbers ; but individually they do not much increase in size beyond the limits stated. Subsequently the majority show very little change, though a certain number may undergo involution, leaving faint atrophic scars, which may disappear altogether in time. A large proportion show other signs of a defective skin. Numerous small fibromata, or their empty tags of skin, such as are common in old people, are scattered about, especially on the neck, and the larger form may occur on the body. The texture of the skin is coarse, and groups of hair follicles on the back have round them an infiltration or fibrous thickening, so that they form colourless hemp-seed-sized papules, or coalesce into flat, fibrous-looking patches, dotted over with large comedones. One or more of these flat fibromatous patches* is usually to be found on the side over the iliac crest, either on the right or left side. Warts, true nævi, and pigmentation are also to be met with.

Etiology.—The disease is of congenital origin, and all the marked cases show intellectual inferiority, a large proportion being chronic epileptics or imbeciles, and it is not uncommon in idiot asylums. Slight developments may occur apart from such conditions. One of my cases was an intelligent lady, æt. forty-eight, and another, æt. twenty-three, a third was a man of twenty-six ; a fourth was a boy of eleven, above the intellectual average of his age and class. This boy had only a few papules, which had slowly developed for two years. One of the ladies had had one papule all her life, while the others had gradually developed ; so that the slight cases are of later development than the others. Nearly all cases occur among the poor.

Pathology.—The disease is presumably an error of development in the shape of a congenital overgrowth of an adenomatous character, developing from embryonic remnants in the skin, but in my experience affecting all the appendages, and therefore really a pilo-sebaceous hidradenoma.

Anatomy.—This has been investigated by Balzer, Pringle, Caspary, and

* These follicular fibromata are figured in the plate referred to in my Atlas.

myself. Balzer found adenoid changes in one case in the sebaceous glands only; in the other, both in the sweat and sebaceous glands, he also found numerous small cysts. Pringle found adenoid changes in the sebaceous glands only, and no cysts. I examined portions of skin from the cheek, forehead, and the fibrous lesions of the back. In the cheek lesions (fig. 55), there was not the interpapillary growth Pringle found. The corium was much thickened, and the most conspicuous feature was the enormous number and size of the sebaceous glands, both single and compound; but the upper half of the corium was also studded with rudimentary hair follicles, while there was also an unusually large number of sweat coils in the deeper portion, so that there was increased development of all the appendages of the skin situated at different levels. The papillary vessels

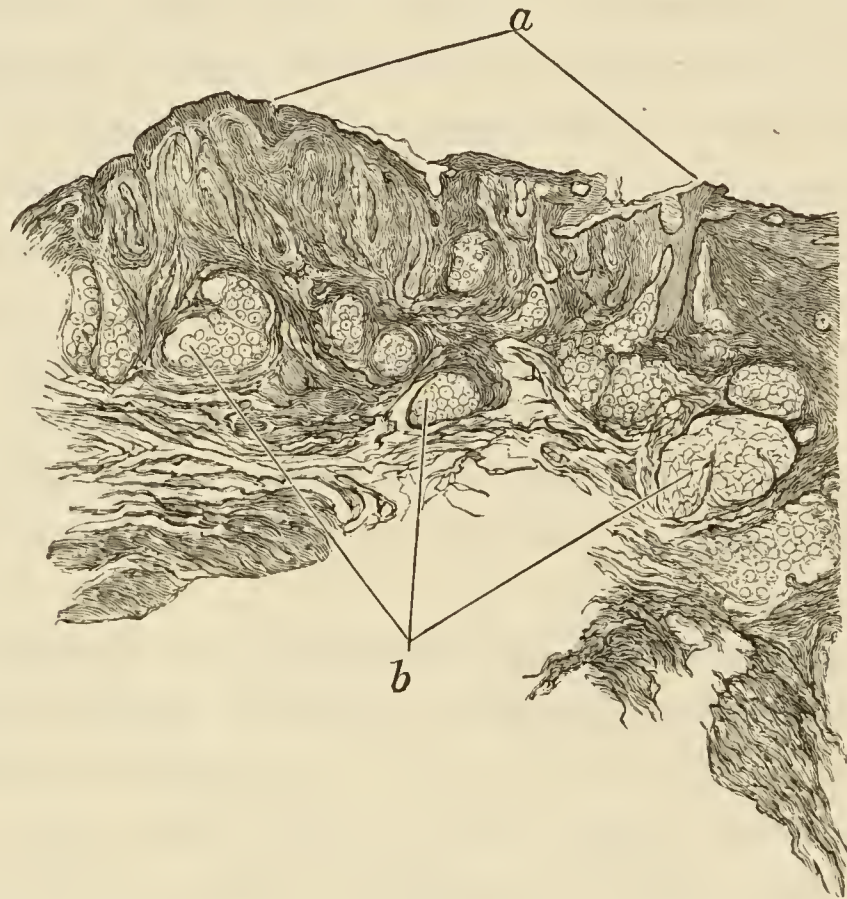


Fig. 55.—Adenoma sebaceum from cheek. $\times 2$ -in. Powell, 2-in. ocul.
a rudimentary hair follicles; *b*, sebaceous glands, large and numerous. Sweat coils are also present in abundance, but do not show with so low a power.

were conspicuous, and there was moderate increase of the connective tissue. In the single large lesion from the forehead, which clinically looked so different, the most striking distinction was the replacement of the enormous numbers of the hair follicles and sebaceous glands by fibrous tissue, of which the greater portion of the tumour consisted, with fragments of hairs and glands imbedded in it. The lesions of the back were seated at the hair follicles, round which dense fibrous tissue was developed in considerable quantity, the lesions being in short follicular fibromata.

Diagnosis.—The most striking features are the occurrence of neoplastic, small, convex, telangiectic, deep-red nodules, semi-confluent as a rule, along the naso-labial folds and the rest discrete, but for the most part limited to the middle two-thirds

of the face. They commence early in life, increase slowly in number and size, and there are generally other congenital defects of mind and body. The diseases mostly resembling it are epithelioma adenoides cysticum, colloid milium, and acne rosacea.

Epithelioma adenoides cysticum is also of congenital origin, but the lesions tend to form irregular groups on the face, including the forehead, and the trunk may also be affected. The lesions are not telangiectatic, and intellectual defects are not the usual concomitants.

The two diseases resemble each other in both attacking the face, in both being probably of embryonic origin, and in their slow evolution and stationary behaviour after development. Indeed, it would not be surprising if both these affections turn out to be slightly different clinical expressions of the same pathological process, a view which W. Pick* has also put forward quite recently.

Colloid milium occupies the frontal and orbital regions. In adenoma sebaceum, the lower half of the face is chiefly affected. Colloid milium nodules are not very numerous, and of a transparent yellow appearance. Adenoma nodules are very numerous, usually some shade of red, but occasionally white, and less translucent than colloid. Telangiectases are not a feature of the colloid, but are nearly always a very marked feature of the adenoma affection.

From *acne rosacea*, the history of early development, the slow evolution and persistence of adenoma, absence of tendency to suppurate, and independence of digestive disturbance and stationary behaviour, would be sufficient.

The idea of *disseminated nodular lupus* could only arise in the most telangiectatic cases of adenoma. Disseminated discrete nodules of lupus are as rare as adenoma sebaceum; the brownish-red colour of lupus is not in any way due to telangiectatic vessels; lupus nodules are not very numerous, not limited to any part of the face, and may even come elsewhere. Some of them grow to a much larger size than the largest adenoma nodule, and there is a decided tendency to undergo involution in the centre while spreading peripherally. It produces also decided

* "Ueber das Epithelioma Adenoides Cysticum (Brooke) und seine Beziehung zum Adenom der Talgdrüsen Adeno-Epitheliom," Walther Pick, *Archiv f. Derm. u. Syph.*, vol. lviii. (1901), p. 201, illustrated.

scars. Darier showed a case to the French Dermatological Society of "vascular and warty nævi," which was only distinguishable from adenoma sebaceum by microscopical examination, which showed vascular, but no sebaceous changes.

Prognosis.—The tendency is for the lesions to slowly increase in number, but not much in size. Involution has occurred in some lesions, but permanency is the most constant feature.

Treatment.—No internal or external medicament has the slightest effect upon them, and the only thing, therefore, is to remove them by surgical means. Hallopeau removed some of the growths by the curette and by scarification, but a year later some had recurred. Pringle tried to scoop or to bore out some of the nodules, but not very satisfactorily, on account of their depth. In the case of the lady, where the number of papules was not large, I successfully removed them by electrolysis, exactly in the same way as in occluding telangiectatic vessels; the needle attached to the negative pole was introduced once for the small nodules, and several times for the larger, a current of three or four milliampères being employed. In a very extensive case, I excised a portion of the naso-labial fold, which was very prominent on each side, and also large lesions on the forehead, and obtained primary union; the rest was vigorously scraped with a curette, the nodules being very resistant. Great improvement was effected, but several operations would have been necessary for anything like a complete removal of the lesions.

CARCINOMA CUTIS.

Cancer of the skin occurs in two varieties of scirrhus, the lenticular and tuberoso, both of which are nearly always secondary to cancer of the breast; melanotic cancer of the skin was formerly described; then the general view was that it was really sarcomatous; but Chambard* (1879), J. Hutchinson jun.† (1893), and Unna (1894) brought forward evidence that the old view was the

* *Lancet*, October 4th, 1879, Annotation on Chambard's Article in *Archives de Physiologie*. Mott, *Path. Trans.*, vol. xxxvii. (1886), p. 475, but he could not then feel sure it was carcinoma. Gilchrist, *Amer. Jour. Cut. Dis.*, vol. xvii. (1899), p. 117, many references; and Whitehead, *abs. loc. cit.*, vol. xix. (1901), p. 149.

† Hutchinson jun., *Path. Trans.*, vol. xlv. (1893), p. 148.

correct one in a large number of cases, and Unna* stated that all pigmented cancers of mole origin were of the alveolar variety. A pigmented alveolar cancer of the lip of doubtful origin is recorded by Mott. Gilchrist also confirms these views. Whitehead records a case in which the tumour arose from an unpigmented mole, and was of the same structure as a melanotic cancer, but with no pigment. Epithelioma and its congeners, rodent ulcer and Paget's disease, are far more common and characteristically cancers of the skin. The first three forms concern the general surgeon more than the dermatologist, and require here only a brief notice.

Carcinoma Lenticulare† is the most common form of cutaneous scirrhus. It begins as small, shot-sized, flattish red papules, which enlarge to the size of a pea, bean, or even filbert, most of them projecting more or less above the surface, while others are subcutaneous. They are generally seated on a red or violaceous surface, which may be traversed by dilated vessels, and the skin is hard, smooth, and glistening. This induration has a border well defined to the touch, may extend over the whole or greater part of the thorax and abdomen, interfering with deep inspiration, like sclerodermia, and constituting the "cancer en cuirasse" of Velpeau. The lymphatic circulation of the whole region is interfered with, lymphatic vesicles with copious clear fluid discharge are often present, the glands enlarge, and the limb adjoining becomes much swollen, preventing free movement. There may be severe lancinating pains, or only itching and burning, at all events at first. In Morris's case the disease commenced as diffuse hardness in the skin of the breast above the right nipple, and rapidly spread over the chest, the lymphatics standing out like radiating cords from the nipple; nodules appeared later.

* Unna, *Berliner klin. Wochensch.*, 1893, Abs. *Brit. Jour. Derm.*, vol. v. (1894), p. 318.

† "Lymphatic Infiltration of the Skin in Carcinoma of the Breast," J. Polaud, *Lancet*, vol. ii. (1885), p. 338. A well-marked instance is published, with plates and histology, by Morrow and Robinson, in *Amer. Jour. Cut. and Ven. Dis.*, vol. ii. (1884), p. 1; and two cases with histology and most of bibliography to date by Nevins Hyde in the *Amer. Jour. Med. Sciences*, March, 1892. Dubreuilh in 1889 published a case at Bordeaux. Hutchinson in 1891, *Amer. Jour. Cut., Dis.*, vol. ix., p., 181. Kaposi showed a case at the Derm. Cong. in 1892, and Morris another at the Derm. Soc. of London, November 13th, 1895.

There was very little pain the first six months, but before her end, eight months from the onset, it was very great. As the nodules increase in number and size, they coalesce into large irregular masses, which sooner or later break down, ulcerate, and fungate, sometimes bleeding profusely. The patient becomes cachectic, wastes, and dies exhausted, or is hurried off by internal metastatic deposits or intercurrent inflammation. In Morrow's case, beside the characteristic papules and nodules, there was a multitude of milium-like bodies, the size and shape of wheat grains, and consisting of masses of epithelium, which at the periphery were vitally active, and in the centre, fattily degenerating, and on pressure, shelled out readily like comedones. They were abundant nearly all over the front of the trunk and in some regions of the back, and were the first change noticed by the patient, and "the most characteristic feature of the advancing part of the disease."

These cancers are, as far as the skin is concerned, according to Unna and others, epithelial infarctions of the lymph track, and not endothelial cancers. There is no essential difference between the so-called primary cases and those secondary to the breast, except that the primary are rarer and have a more superficial origin. Carless showed two cases at the Dermatological Society, secondary to cancer of the breast after removal, on December 14th, 1898. In one, the process was commencing apparently as an erythema, spreading from the side operated on to the sound one; the red was not uniform, but somewhat in streaks. There was superficial induration to the touch, but no pain or tenderness.

In the second, there was recurrence of the cancer in the cicatrix, and from this there had spread a diffuse induration with well-defined red border and pale centre, in which nodules could be felt. There were red papulo-vesicles in a band over the left nipple, from which lymph often flowed. The first patient was ruddy and plump and fifty-two years of age. The second was emaciated, the disease being much farther advanced.

Carcinoma Tuberosum is rarer than lenticular. As the name indicates, the nodules are larger than the preceding variety, and may be of any size up to a hen's egg. At first deeply imbedded in the subcutaneous tissues and deep part of the corium, where they may be felt as very hard lumps, they gradually grow

towards the surface, and the skin over them becomes tense and red, often with a brownish or bluish hue. They are often very numerous, scattered or aggregated into irregularly nodulated masses, and all tend to soften and break down into foul and painful fungating ulcers, which speedily exhaust the patient. One of the worst cases of this kind, where the disease was primary in the skin, is reported by Röseler.* The nodules appeared suddenly, almost all through the panniculus adiposus, in a woman of fifty, increased rapidly in number and extent, until the whole body surface was covered with tumours from a pea to an egg in size, over which the skin was at first stretched. and red, and then groups of yellow vesicles formed; then they all broke down into ulcers almost simultaneously, within six months from the onset, the patient sinking seven weeks later. There was no internal growth that could have been the starting-point. Korowin reported a case which began as a small-celled medullary carcinoma of the scalp and rapidly generalised in the lungs and skin; on the latter were two hundred nodules, some of which broke down and were indistinguishable from syphilitic rupia.

Treatment for either form is unavailing. Euthanasia is all that can be aimed at.

EPITHELIOMA.†

Synonyms.—Epithelial cancer; Cancroid; Carcinoma epitheliale; *Fr.* Epithéliome; *Cancroïde*; *Ger.*, Epithelialkrebs.

Definition.—A malignant ulcerating new growth of the skin and mucous membranes, characterised by the development of heterologous epithelium in the corium and subcutaneous tissues.

Epithelioma begins in most instances at the border of the mucous membranes and the skin, such as the lower lip. It may also begin on the mucous membrane only, as on the tongue, or on the free surface of the skin. It is with the disease, as

* Virchow's *Archiv*, vol. lxxii., p. 372, with plates.

† *Literature.*—Author's Atlas, plate lxxvi., figs. 4, 5, 6, 7. Paget's lectures on Surgical Pathology, third ed., 1870, p. 700—the best clinical account in the English language, to which I am much indebted. Cornil and Ranvier's *Manual of Pathology*, English ed., 1882, vol. i., p. 257. *Cancerous Affections of the Skin*, Thin, 1886. *Der Epithelialkrebs*, Carl Thiersch, 1865. Sebert among older writers; and Fabre Domergue (Paris: 1893), *Les Cancers Epithéliaux*, and Unna's *Histopathology* for his special views may be consulted.

manifested in the first and the last position, that we have chiefly to do.

There are three clinical varieties : (1) the discoid, (2) the papillary (both superficial), and (3) the deep-seated and infiltrating. These differ in clinical aspect, mode of development, and course, though the process is essentially the same in all, and the primary growth is almost invariably single. In the superficial form, the disease affects pretty uniformly all the tissues of the skin ; in the papillary, the papillæ are the parts chiefly affected, while in the deep-seated, the deep part of the corium and subcutaneous tissues are the primary seats of the disease. These distinctions only hold good for the early stages of the disease, before ulceration has taken place, as the superficial tends to get deep eventually. The disease may begin on apparently healthy skin, on the site of a scratch or other injury, or on previously diseased tissue.

The primary epithelioma is usually single, but given the same kind of local irritation in more than one spot, or the same kind of antecedent lesion being multiple, and the epithelioma may also be multiple. In a patient of my own, a woman, æt. forty-six, epithelioma developed in the upper part of the chest and in the groin, in fungating nodules as big as a walnut. There was also a patch like a crusted lupus which also turned out to be epitheliomatous. The glands in the axilla and groin were also cancerous. All the growths had developed on patches of lupus verrucosus, of which she had several besides those which had become cancerous. Recurrence took place a year later in the axillary one, which was again removed, but a year later she died from generalisation in internal organs.

A surgeon, æt. thirty-nine, whom I saw in 1895 had from the age of twenty-four been subject to small warts on the scalp, palms, and soles ; a large crop came at once, and the others at various times. Several of these warts became epitheliomatous, and were removed at different times, and were pronounced by experienced pathologists to be epitheliomatous. I removed one from near the anus and several of the warts.

Dubreuilh * had a case of multiple epitheliomata of different type. Multiple epitheliomata are not uncommon, also, in xeroderma pigmentosa, but they are of a special type. In secondary

* *Archives Cliniques de Bordeaux*, 1894, p. 333.

epithelioma there is no limit to the number of nodules; thus in Finlay's * case, where the skin lesions were secondary to epithelioma of the stomach, there were scores of nodules on the trunk and limbs.

Symptoms.—**Superficial Discoid.** Ill-defined papules or nodules covered with fine scales, continually renewed after removal, make their appearance, and when laid bare, look like bright red granulations. These gradually enlarge peripherally and vertically, and coalesce into a superficial, hard, round or oval, irregularly surfaced disc, of varying size, sharply defined at the border, which may be abrupt or sloping. The whole is movable with the skin at first, but afterwards becomes adherent to the subjacent tissues, and eventually, though it may be months or years, breaks down into ulceration. Sometimes the initial papular stage may be missed or unobserved, the disease apparently commencing as a fissure in the skin, and oozing with a thin fluid, which dries into a crust of a yellowish-green or black colour. In these forms, the disease is limited to the corium for a long time.

The **Superficial Papillary Epithelioma** is most common on mucous membranes, especially those of the genitalia, on the scrotum and extremities, and often begins on a mole, wart, or other simple papilloma. A soft growth becomes indurated, the component papillæ enlarge, and their epithelium proliferates both within and without. The papillomatous composition becomes more and more evident, especially if the surface epithelium is washed away, and the papillæ project considerably above the surface, and take various forms, cauliflower, fungiform, cylindrical, conical, and pyriform, according to the relative proportion of the base and apex of the growth, and the mode of grouping of the component parts. They are highly vascular, bleed easily, and are of a bright, florid colour, thinly coated with opaque white cuticle, if in a moist position. Sometimes this form develops on the previously described plaque or nodule before, or subsequent to, its ulceration. Both the papillary and discoid forms spread both laterally and vertically, but for a long time, the firm fibrous tissue of the deep part of the corium may resist the downward extension, and the lateral growth is thus the predominating one. This may be very slow until ulceration sets in, which it inevitably

* *Path. Trans.*, vol. xxxiv. (1883), p. 102, with plates.

does, generally before the patient comes under notice, commencing in the plaques as a diffuse excoriation, extending up to, but not destroying, the border of the growth, or from a fissure or wound in which the disease commenced. The discharge dries into a scab or dark crust, beneath and beyond which the ulceration extends.

In the papillary form, the centre breaks down first, and extends in all directions, but the new growth more than compensates for the advancing destruction. The resulting ulcer is generally characteristic; it is roundish, oval, or elongated, with uneven outline. The base and border are hard, and the latter is everted or undermined, and purplish-red, the thickness of the infiltrated part varying from one-twelfth to half an inch, in proportion to the extent of the ulcer. The granulations are small, bleed easily, are situated on a convex, irregular floor, and exude a thin, serous, peculiarly offensive discharge, which, unless in a moist situation, dries into a crust, and is speedily renewed after removal. This ulcer may be quite superficial, "cropping the papillary layer" only, as Wilson puts it, and even healing in the centre, while it spreads peripherally. Eventually, however, the cancerous epithelium invades the deep layers; and when once the fibrous barrier is penetrated, the malignant process proceeds comparatively rapidly through the fat, fascia, muscles, and even the bones, implicating the neighbouring lymphatic glands, which enlarge into hard nodules, and then coalesce into large nodulated masses, which soften in the centre, the skin over them becomes livid often with superficial pustules, gives way, and deep foul ulcers are produced; the next series of glands gets involved, and in rare instances, the viscera, the lungs, liver, and even heart; the patient becomes cachectic, and soon dies, exhausted by the pain and discharge, or from some intercurrent malady. The whole disease lasts, on an average, four years when it is on the skin, the course being much slower in the superficial than in the deep form. The sensory symptoms which accompany these tumours and ulcers vary much. Sometimes they produce scarcely any inconvenience, at all events until ulceration has set in; or there may be stinging, pricking, or burning; but more frequently there is a dull aching, with exacerbations; or again, it may be severe and lancinating. The suffering is naturally much greater when it is about the mouth or anus.

Deep-seated Epithelioma represents at an early period, the condition only attained to at a later stage in the superficial form, and since its course, therefore, is much shorter, and more serious altogether, it is fortunately much rarer than the other forms. It is most common in the tongue and submucous tissues, but occurs also in the subcutaneous tissues, while the skin or mucous membrane over it is perfectly healthy at first. A good example, depicting the disease in the skin, is related by Paget. "A gentleman, æt. sixty-four, had a tuberculated growth of ten weeks' duration on the side of the nose an inch in diameter, and gradually elevated up to about two lines above the surface; the skin over it was thin, adherent, and florid, with dilated vessels; the base of the growth rested on the bones, and involved the whole of the tissues to the periosteum, but was movable *en masse*; in the middle and most prominent part was a fissure nearly a line in depth, with black, dry borders, from which a very slight discharge issued." It was very painful, and, from the history, probably began in a small sebaceous cyst. The patient was well ten years after its removal.

Sometimes the surface and deep tissues are simultaneously involved, but the deep parts are always most affected, and then form "a roundish, firm, or hard and elastic lump," but very little raised above the surface, on some part of which is a fissure, ulcer, or cancerously affected skin (Paget). The mode in which this form begins to ulcerate is thus described by Paget:—"Either the skin over the tumour becomes adherent, thins, and cracks, the fissure for some time remaining dry and dark, while the ulceration is extending below, or the central part softens, suppurates, or even sloughs through a comparatively small opening, while ulceration spreads laterally from the cavity; or, in secondary growths and under old scars, the cancer fungates through a sharply defined ulcer."

The positions for epithelioma are, according to Paget, in the order of frequency—the lower lip 50 per cent. or more, the tongue and external genitalia of both sexes, more rarely at the anus, interior of the cheeks, the upper lip, palate, larynx, pharynx, and cardia, the neck and os uteri, the rectum, bladder, perinæum, extremities, face, head, and trunk. Thiersch gives, in 102 cases, 78 on the face, of which only 48 were on the lower lip. Roger Williams collected 329 epitheliomas of the lip from some of the

London hospitals, and all except three were on the lower lip and in men. Epithelioma of the upper lip, therefore, is very rare, but there are many cases scattered through literature, and Eschweiler collected no less than 66 cases. When it does occur, although actually there are more males than females, it is only as 3 : 2. It is also said to affect the left side oftener than the right. Certain occupations or customs may, however, modify the usual proportion; thus, in workers with paraffin and chimney sweeps, it is abnormally common on the scrotum (**chimney-sweep's cancer** *); and it is common on the thighs in the inhabitants of Northern India, commencing in the cicatrices of burns, produced by their custom of warming themselves over pots of hot ashes (T. Maxwell).

Etiology.—Five out of six cases are males, and the great majority occur after the age of forty; it is rare under thirty, but soot cancer has been seen in children of eight years old, and Lébert † records a case of cancrioid in a child of eight and a half, in whom it was almost congenital, and Selberg ‡ a case at six months old. Heredity accounts for a small number only, about 5 per cent. The most potent factor as an exciting cause, is long-continued irritation, though occasionally a single injury has been followed by it. It is thus that its preponderance in men, and on the lower lip, is accounted for, from the prevalence of smoking, even some of the few women victims having been smokers. Next to this, as starting-points, or predisposing conditions, are certain neoplasms, especially senile warts, horns, and other forms of papillary hypertrophy and horny thickening, such as may be seen in arsenical keratosis of the palm and sole (Hutchinson, A. Lane, and Hartzell). § Other benign growths which may take on this form of malignancy are the so-called ichthyosis and leukoplakia linguæ, moles and vascular nævi, adenomata, long-standing ulcers, such as are due to

* See Butlin's "Lectures on Cancer of the Scrotum," *Brit. Med. Jour.*, vols. i. and ii., 1892, for a full account of the subject.

† Roger Williams, *Brit. Med. Jour.*, October 15th, 1898, quotes several cases from eight years and upwards.

‡ Selberg, Virchow's *Archiv*, vol. cxlv., p. 176, with references. The patient was a boy, and had a walnut-sized nodular ulcerating tumour on the right shoulder. It began as a red point when he was four weeks old.

§ "Epithelioma as a Sequel of Psoriasis," etc., *Amer. Jour. Med. Sciences*, September, 1899.

lupus vulgaris, erythematosus, or syphilis, and the atrophic skin or scars produced by those diseases, by xeroderma pigmentosa, and by burns, which are particularly frequently the prey of the papillary form. Under the name of **Lentigo melanosis**, Hutchinson* has drawn attention to the development of epithelioma of the eyelid on persistent pigment patches, which are occasionally seen on the face, chiefly the orbit of old people, and have formed from an aggregation of lentigines, also from the melanotic whitlow, though the growth then is more frequently a sarcoma. In a case of Sheild's a mole was accidentally burned and a brownish discoloration spread all round it; after twelve years melanotic epithelioma developed. Galezowski has also reported a case of pigmented epithelioma from a mole on the eyelid. Sheild† also has published a good example of multiple cancer in the condition called by Unna "sailor skin," in which the lesions of exposure to weather severities become the seat of epithelioma.

Pathology.—The essence of the epitheliomatous process is the development of epithelium, and its infiltration into the deeper tissues, where it does not normally exist, and where its presence produces irritation and consequent inflammatory changes.

There are two classes of epithelioma, the pavement and cylindrical-celled; the latter affects only internal organs, such as the intestines, and need not be discussed here. Pavement epithelioma is divided by Cornil and Ranvier into the lobulated, the tubular, and the pearly; the first two only require consideration, the pearly form being a benign tumour.

Lobulated Epithelioma is the common form and type of the disease, and, as its name indicates, is composed of lobules. In a vertical section of a single lobule, the component cells are seen to undergo the same changes, from the periphery to the centre, as the normal epidermis does, from the lowest cells of the rete to the surface. On the outermost layer of the lobule, the cells are cylindrical (palisade cells); internal to this, they are polygonal and dentate (prickle cells); while in the centre, they are cornified and stratified, but, owing to their position, are compressed into lobes, with concentric layers like an onion ("bird's-nest bodies"), in the centre of which multi-nucleated and colloid cells are sometimes found. The lobules are separated by a stroma supporting the

* *Archives of Surgery*, vol. iii. (1892), p. 319, "Lentigo Melanosis," and sequel, vol. v. (1894), p. 253, with coloured plate cvi. Dubreuilh and others have since published cases as Lentigo Maligna Senilis.

† *Lancet*, January 7th, 1899, p. 22, with coloured illustrations.

vessels, which never penetrate into the lobules. Both stroma and cells vary in composition and structure; the stroma may vary both in vascularity and density, and be either embryonic, mucoid, or fasciculated—*i.e.*, adult connective tissue—or all three together, in varying proportions; the cells may be colloid, horny, occasionally melanotic,* but seldom mixed in the same tumour. There is, however, another process, of an inflammatory kind, produced by the irritating influence of the cancerous epithelium on the tissues; the stroma between the lobules and the tissues immediately surrounding the advancing epithelium is infiltrated with round cells, most, if not all, immigrant cells; these cells separate and break up the fibres of connective tissue, and the tumour may disintegrate or slough from obliteration of the vessels, either by endarteritis, or by pressure on them by the epithelial lobules and leucocytes.

Lobulated epithelioma is developed from the epidermis of the skin or mucous membranes, or from the new embryonic tissue near it; whether it is by proliferation of the epithelial cells, or, as Rindfleisch thinks, by the influence of such cells on those of the connective tissue in the neighbourhood, is a matter of dispute, but on the whole, the balance of evidence is in favour of the first view. At all events, the result is a great downgrowth of the interpapillary processes of the rete, and secondary processes bud off from these laterally, as well as terminally, and becoming detached appear as isolated epithelial masses, often in globes in the corium and deeper tissues, so that it is at this stage again possible to recognise their point of departure. Buds may also come off from the hair follicles, and Cornil and Ranvier think from the sebaceous glands also, the cells increasing from the periphery to the centre, pushing the fat cells to the centre, and finally extruding them; Thin, however, doubts this, though, *a priori*, it seems probable enough. In the sweat glands, by a similar process, solid cylinders of epithelium are formed, which send out buds in the adjacent embryonic tissue, and unite into a network; some of these cylinders, which consist of small pavement cells, enlarge, and, by continued multiplication of the cells, which also become larger towards the centre, "bird's-nest bodies" are ultimately formed from these also, and get separated like those from the rete. When this development from the sweat glands is primary, and stops short of the first stage of the process described in the development of the cylinders from sweat glands, *i.e.*, does not go on to epidermic evolution, we have **tubular epithelioma**, the surrounding stroma being embryonic mucous or fibrous tissue; these tumours are less malignant in the skin than the lobulated form, though sometimes they relapse or extend to the lymphatic glands, and cannot, therefore, represent rodent ulcer.

Unna divides cancers of the skin according to their general structural characters, into—1. Fungating; 2. Cylindrical; and 3. Alveolar.

The term cylindrical of group 2 does not correspond with cylindrical-celled cancers, but refers to the grouping of the cells

* Paget, *loc. cit.*, p. 722, a case in which the disease began in a pigmented mole.

into cylinders. He makes several subdivisions of these main groups. His views are original, and founded on the careful examination of seventy cases, and are therefore deserving of consideration, but are too elaborate to be discussed here, and the student must refer to his *Histopathology*. The usually accepted views are here given.

Diagnosis.—The most characteristic features, when it usually comes under notice, are those of a chronic, painful ulcer, most frequently on the lower lip, with indurated, everted, or undermined edges; and sooner or later, secondary implication of the neighbouring lymphatic glands. The lesions of rodent ulcer, syphilis, lupus, acuminate warts, and rhinoscleroma, are the diseases from which it has to be distinguished.

The distinctions from *rodent ulcer* are mainly clinical, and are given under that disease.

From *syphilitic nodules and gummatous ulceration*.—The lesions of syphilis are much more rapid in their course, and often painless; there is no hardness or new growth round the ulcers, which are generally multiple, sharp-edged, and punched out; and the pus is abundant and yellowish, while that of cancer is scanty, viscid, and sanious. In rare instances, iodide of potassium may be given to decide a doubtful case, but it must be remembered that true epitheliomata may get smaller from the absorption of inflammatory products under iodides, but they never disappear.

Epithelioma may be distinguished from a *chancre* on the penis or lip by the history and duration of the lesion, which will be short in the case of a chancre, as compared with the cancerous ulcer.

In *lupus vulgaris*, the lesions are more often multiple, and more likely to begin in childhood, or at least in young persons. There is an absence of induration, while there are nearly always some of the characteristic, soft, brownish, semi-translucent nodules near the ulcer; the pus also is more abundant, and not bloody or offensive. The possibility of epithelioma being grafted on an old lupus must be borne in mind.

Since epithelioma so often starts from a *wart*, it is important to recognise the change as early as possible. If a wart, which has previously been quiescent, becomes uneasy or painful, begins to grow and bleed, or becomes indurated at the base, in a person past middle life, it should at once be removed.

Prognosis.—This is always unfavourable unless complete removal can be effected at an early stage, but is much more so in some cases than others.

The unfavourable circumstances are—the advanced age of the patient, the tumour being situated on mucous membranes, or other places unfavourable for complete removal; if on the skin, its being deep-seated, and secondary growths in lymphatic glands or elsewhere, the course having been unusually rapid. Favourable conditions are—the patient being still in the prime of life, short duration of the tumour, moderate infiltration, the growth being superficial, its being away from mucous membranes, ulceration being slight and superficial, and the absence of secondary implication of the glands. As to the course, it may in the deep-seated be fatal in two years, or in three or four; in the superficial, it may go on for several years, until the ulceration begins to penetrate into the deeper tissues, when its downward progress becomes more rapid, and the same as that of the deep-seated variety. The tubular variety is nearly always very slow, but it is impossible to distinguish it clinically.

Treatment.—Removal, speedy and complete, is the only safe course to pursue. This may be effected by the knife, caustics, galvano-cautery *écraseur*, or actual cautery, according as the cancer is superficial or deep, and to the condition of the tissues round. Whatever is done should be done thoroughly, and even the apparently sound tissues immediately round should also be removed. Caustics are only suitable for the superficial form; the solid potassa fusa may be bored into the tissue in and round the growth, neutralising any excess of the potash by dilute acetic acid; the pain is of comparatively short duration.* A. R. Robinson of New York is a very great advocate for this. Other caustics are chloride of zinc, Vienna or arsenic paste, according to the formulæ at the end, and Kaposi recommends pyrogalllic acid ʒij to ʒj of lard. Chlorate of potash, resorcin, acetic acid, fuming acid, nitrate of mercury, methylene blue, pyoktannin, lactic acid, etc., have advocates, but whatever is used should be applied so as to remove the entire growth, a superficial action being worse than useless. All of them, in my opinion, are far inferior to the knife, and should only be used where the patient refuses an operation, or for some other reason

* *International Journal of Surgery*, July, 1892.

it is impossible to excise the growth. The galvano-cautery *écraseur* is sometimes useful when the growth cannot well be reached by the knife, as occasionally in eyelid growths, but it is not now used for the tongue as septicæmia so often followed.

Scraping with the sharp spoon is still practised by a few on the superficial growths, but in my opinion cannot be too strongly condemned where excision is possible; it is not only very likely to fail, but recurrence is speedy and aggravated. Unless the removal can go well beyond the disease, recurrence is always only too likely to occur, but hopes of eradication may be entertained, if this can be effectually dealt with as soon as it makes its appearance.

Lassar* has brought forward three cases of epithelioma which had healed soundly under the administration of five-drop doses of liquor arsenicalis three times a day. There would be no harm in trying it in inoperable cases, or in the early stage when the case could be watched, so that if the growth was not arrested excision could be resorted to. Stoker recommends his method of oxygen constantly applied to the growth. While I should not waste valuable time in an operable case, it has appeared to relieve pain, and may therefore be used in inoperable cases. The Röntgen rays may also be used, but these are more applicable to rodent ulcers, under which the procedure is described.

PAGET'S DISEASE OF THE NIPPLE.†

Synonym.—Malignant papillary dermatitis (Thin).

Symptoms.—This affection was first described by Paget in 1874, from fifteen cases. While at the onset, it resembles a simple

* *Berlin klin. Wochensch.*, 1893, p. 537. Abs. *Annales de Derm. et de Syph.*, vol. v. (1894), p. 255.

† *Literature.*—*St. Bart's Hosp. Rep.*, 1874, p. 83, the best clinical account. For histology, Butlin, *Med. Chir. Trans.*, vol. lix., p. 108, and vol. lx., p. 153. Thin, *Med. Chir. Soc.*, 1880, and *Brit. Med. Jour.*, May 14th, 1881. Duhring and Wile, *Amer. Jour. of Med. Sciences*, July, 1884, with a good summary of previous observations. "Maladie de Paget," by L. Wickham, *Thèse de Paris*, 1890 (G. Masson, publisher)—an excellent monograph, with coloured plates, setting forth the psorosperm theory and giving the bibliography. Jamieson, 3rd ed., p. 537. G. T. Elliot, "Paget's Disease treated with Fuchsin," *Amer. Jour. Cut. and Gen. Ur. Dis.* vol. x. (1892), p. 272.

inflammation, before very long it develops into scirrhus cancer of the whole breast. It is generally limited to the nipple and areola, but in Jamieson's case extended all over the breast and axillary region, and was nearly as extensive in G. T. Elliot's case. It occurs in women from forty to sixty years, and has been compared to an eczema, having, as Paget describes it, "a florid, intensely red, raw surface, very finely granular, as if the whole thickness of the epidermis had been removed. From such a surface, on the whole or greater part of the nipple and areola, there is always a copious, clear, yellowish, viscid exudation." The border is sharply defined, and even slightly raised, and very soon, if not at the very first, there is marked induration of the tissues, about a line in thickness, which feels, as H. Morris expressed it, "like a penny felt through a cloth." It is accompanied by tingling, itching, and burning, but with no disturbance of the general health.

In a case of mine in a very early stage, the site of the nipple was in a condition of excoriation, partially covered with a thin crust, which when detached left a shallow raw surface; the border was well defined, and when the diseased area was pinched up, very distinct but superficial induration could be felt. The nipple itself had disappeared. The condition had been developing two years, but there was no actual sign of cancer. Sheild's case * was the opposite of this, the superficial ulceration measuring 11 in. \times 10 $\frac{1}{2}$ in. It had been present six years, and although fungating in one part, the glands were not enlarged.

In Paget's fifteen cases, all within a year or two developed scirrhus of the breast, one of the first signs being retraction of the nipple. There is, however, no doubt that the apparently inflammatory condition may exist for several years before it becomes recognisably cancerous; in H. Morris's case, it was six years, in Duhring's case ten years, and in Jamieson's twenty years.

I have met with a precisely similar condition on the scrotum † of a man, æt. forty-seven. After remaining as a raw surface for two years, nodules developed in the centre of the ulcer.

* Author's Atlas, plate ix., fig. 3, early stage. Plate lxxvi., fig. 8, late stage in scrotum.

† The case is published, with coloured plate and histology, in *Path. Soc. Trans.* vol. xl. (1889), p. 187. Pick's case is reported in *Deutsch. med. Zeitung*, November 5th, 1891; pseudo-coëcidia were found in the epithelium.

Pick has seen it on the glans penis, and Sheild* had a case affecting the skin over the pubes. Neisser, Pospelow, and Tarnowsky have also met with it in the penis and scrotum, Winfield and Dubreuilh† have observed it on the vulva, and Darier and Couillaud on the arms and perinæum.

Pathology.—The important point to decide is, whether the inflammation is at first of a simple kind, or whether it has the impress of cancer upon it from the onset.

Thin, who has made very careful microscopical observations on four cases, believes that they demonstrate that it is cancer from the outset, hence the name he proposes ; but in none of his cases

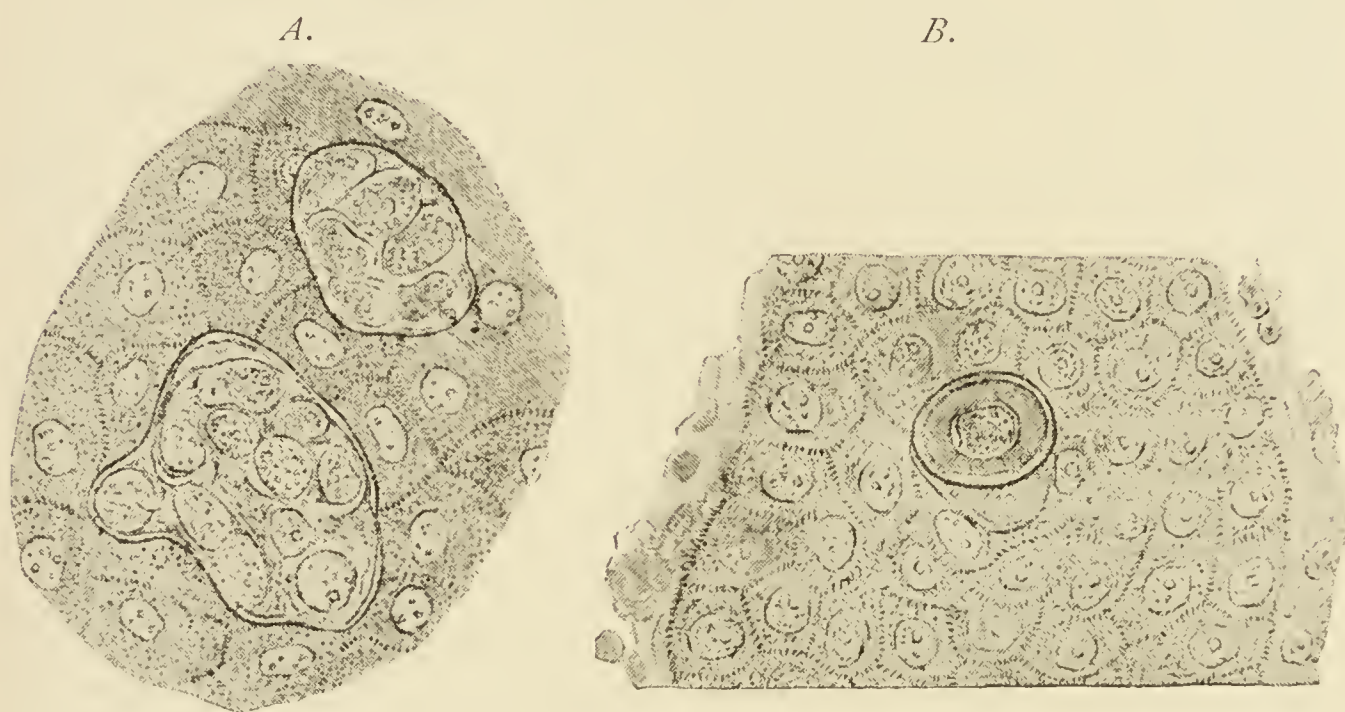


Fig. 56.—Pseudo-psorosperms in my case of Paget's disease of the scrotum (after Wickham).

A. Two pseudo-psorosperms very highly magnified in the rete mucosum.

B. A single pseudo-psorosperm, not so highly magnified, in the middle of an interpapillary process of the epidermis.

was the disease in an early stage. The clinical facts are opposed to this, as it is difficult to believe that a cancerous disease would continue for ten and even twenty years, in some cases, before the cancerous nature declared itself in the whole gland. Comparison has been aptly made with the chronic surface inflammations of the tongue in syphilitics, and the so-called ichthyosis linguæ, in

* Both of Sheild's cases are reported by Rolleston and Hunt with microscopical examination under *Dermatitis Maligna*, in *Path. Soc. Trans.*, vol. xlviii. (1897), p. 211.

† *Brit. Jour. Derm.*, vol. xiii. (1901), p. 407. Dubreuilh mentions nearly all previous cases.

which epithelioma so often develops, though only after the irritation has lasted for many years.

Darier's * discovery of psorosperm-like bodies in this disease, which were also found by L. Wickham in my case affecting the scrotum (fig. 56), has lost much of its interest, since it is now admitted even by Darier himself that they are only metamorphosed epithelial cells; their constant presence, however, is of some diagnostic importance.

Anatomy.—The anatomy has also been investigated by Butlin, Thin, Wile and Duhring, Schweinitz, Porter, and others, with on the whole general agreement. The boundary between the diseased and normal tissue is sharply defined by the proliferating downgrowth of the rete, and by the abrupt termination of the cell infiltration. In the affected area, the epidermis is lost to a varying extent, entirely in some parts; but while the surface part is gone, there is downgrowth of the interpapillary part, ultimately compressing and even sometimes obliterating the papillæ. These latter are at an earlier stage densely infiltrated by masses of lymphoid cells, and there is more or less perivascular infiltration in the upper layer of the corium, while in the middle and lower layers are alveoli of epithelial cells, significant of cancer in the advanced cases. The first malignant change, Thin says, takes place in the lactiferous ducts; hence his name of "duct cancer." They are stuffed and dilated with squamous, not columnar, epithelial cells. This proliferating process spreads along the smaller ducts, and the distended walls give way, extruding the epithelial mass; and by its own proliferation and by its effect on the neighbouring tissues, cancer develops outside them as well as within, spreading at first upwards and outwards, and then into the gland structure itself. To Rolleston, however, it appeared to be derived from the stratum Malpighii, but differed from an ordinary epithelioma. The anatomical resemblance of my case to rodent ulcer was very striking. The easiest way to demonstrate the pseudo-coccidia is to scrape the surface, and treat the scrapings with iodine or bichromate of potash, after Darier's plan, or to soak the scrapings in liquor potassæ and mount in glycerine jelly, as recommended by J. Hutchinson jun. They can be readily seen with a half-inch power. They are round or oval, .03 mm. long, have a double contour on section from the shell-like envelope, and are found in the thin epithelial layer of the raw-looking surface.

Diagnosis.—It is highly important to decide as soon as possible as to the nature of what is, at first sight, only an eczema of the nipple. This may not be possible at the commencement, but when the disease has lasted for some time, in a woman past the climacteric period, and has been rebellious to treatment, the

* These observations have been confirmed by Bowlby, who examined thirteen cases, *Med. Chir. Trans.*, vol. lxxiv. (1891), p. 341.

differences between Paget's disease and eczema, which have been pointed out by McCall Anderson and others, begin to be recognisable.

Eczema of the nipple is most common during the child-bearing period, especially during lactation; Paget's disease occurs usually after the climacteric. In eczema, while there is frequent fissuring, desquamation, and exudation, there is not the intense red, raw, granulating appearance which is brought into view by the removal of the crusts in Paget's disease, in which there are none of the papules, vesicles, and pustules, with the exacerbations which characterise eczema. In eczema, the tissue is soft, there is no induration, and the edge is ill-defined. In Paget's disease, there is superficial induration about a line in thickness, to be felt "like a penny through a cloth." The border is sharply defined, and may be slightly raised. Itching, which is an early sign in eczema, is a late one in Paget's disease.

In all doubtful cases, search for pseudo-psorosperms should be made by one or other of the methods described under "Anatomy," for their presence is constant in Paget's disease, and they have never been found in eczema.

When the nipple becomes retracted, the nature of the disease is no longer doubtful. Shooting or aching pains begin to appear, the breast gets hard, lumpy, and knotty, and before long, the neighbouring glands become involved.

Prognosis.—Unless the disease is recognised and energetically dealt with, the prognosis must be that of cancer; but if the diseased tissue be thoroughly removed or destroyed, a perfect cure may be looked for.

Treatment.—In the early stage, if the diagnosis is doubtful, the treatment would be the same as for eczema of that part, to which the reader is referred. In a woman past the middle age, if the part will not heal with soothing and protective measures, irritant remedies should be avoided. Mild and superficially acting caustic remedies only do harm; and if the dangerous character of the disease be suspected, either the breast should be removed, or caustics, sufficiently powerful to destroy the whole of the affected tissue, should be selected. The best of these is the chloride of zinc paste (Caustics, F. 11), which should be spread thickly on lint, the exact size of the diseased area, kept on four or six hours, and the slough poulticed off with wet boric lint, under

oiled silk ; or the surrounding tissues may be protected by lint wet with vinegar, and solid caustic potash, forcibly bored into the diseased area until it is thoroughly destroyed.

Elliot's case healed completely with an ointment of fuchsin, beginning with a grain, gradually increased to five grains to the ounce. These applications, however, should be reserved for cases which refuse operation, and few women can understand the necessity for so radical an operation as removal of the entire breast when there is only a small sore. Probably the removal of this sore alone, rather widely and deeply, as for an epithelioma, would be sufficient in an early stage, and it might be more easy to obtain consent for the minor operation.

RODENT ULCER.*

Synonyms.—Jacob's ulcer ; Cancroid ulcer ; *Ulcus exedens* ; *Noli me tangere* ; *Fr.*, *Ulcère rongéant* ; *Ulcère chancreux* ; *Ger.*, *Der flache Krebs*.

Definition.—A chronic cancerous ulceration of the skin, nearly always on the face, with a tendency to much destruction of all the tissues, very little to new growth, and none at all to secondary infection.

The disease was first described by Jacob of Dublin in 1827 ; it is still a matter of dispute as to whether rodent ulcer is a separate disease, or only a clinical variety of epithelioma, but, as it is usually clinically distinguishable, it requires separate description. On the Continent, rodent ulcers are usually called epitheliomata.

Symptoms.—The disease is not very rare from the age of forty onwards. It chiefly attacks the orbit, sides of the nose, or any part of the upper two-thirds of the face, occasionally the scalp, neck, and still less frequently, other parts also. It begins as a

* *Literature.*—Author's Atlas, plate lxxvi., figs. 1, 2, 3, showing different stages. For clinical features, Paget's *Surgical Pathology*, *loc. cit.*, and Hutchinson, *Med. Times and Gazette*, 1860, "A Clinical Report on Rodent Ulcer." For pathology, Thiersch, *loc. cit.*, and Thin, *loc. cit.*; Collins Warren, Boylston prize essay, Boston, 1872 ; T. and C. Fox, *Path. Trans.*, vol. xxx.; Sangster, *Brit. Med. Jour.*, October 22nd, 1882 ; Hume, *Brit. Med. Jour.*, January 5th, 1884 ; Paul, *Brit. Med. Jour.*, May 2nd, 1885. A. Bowlby, an analysis of sixty-six cases, *Path. Soc. Trans.*, vol. xlv. (1894), pp. 153 and 163. There are many other interesting communications on Rodent in this volume.

pimple or trifling excoriation, or as a soft, flat-topped, or indented nodule, which the patient calls a "wart," but the surface is smooth, and it is a brownish-red, solid, moderately firm mass, often with a dilated vessel coursing over it. This growth may remain unchanged for many years, but sooner or later it begins to break down, and when once it has begun to ulcerate, it continues surely, though it may be very slowly and even intermittently, to spread laterally and vertically, eating through all the tissues, both soft and hard, and destroying perhaps the greater part of the face, and eventually the patient's life, by the exhaustion induced, but never implicating the neighbouring glands, or leading to secondary deposits,—remaining, in short, a local disease from first to last. Throughout its course, although there is variable amount of new growth, preceding and accompanying the ulceration, unlike epithelioma, the new growth is slight compared to the destruction which is the predominating feature. Occasionally, however, the preliminary nodule is as large as a hazel or walnut before it breaks down. Bowlby speaks of one of twenty-six years old with a tumour on the nape as large as a Tangerine orange; and Rushton Parker had a case of a large rodent tumour which grew on a bald scalp for nine years without ulceration.

The ulcer is rounded or oval, with a characteristic edge, which is slightly raised, rounded or "rolled," firm, not everted or undermined, with sinuous outline, of a yellowish-red colour, with vessels coursing over it, but with none of the warty growths seen round an epithelioma. The centre, in long-standing cases, is much depressed below the surface, though at unequal levels if the ulcer is large, but, as a rule, with little tendency to form granulations, the surface being comparatively smooth or traversed by furrows. There may, however, be granulations in one part while excavation is going on at another, and in rare instances, it may fungate and bleed, but, as a rule, the discharge is scanty and odourless, and while there is but little tendency to new growth, indicated by the thin layer of indurated tissue at the base and border, there is still less to permanent repair, though attempts at cicatrization sometimes occur when the ulceration has actually eaten away the diseased edge. The cicatrization is still more marked in the very **superficial variety**, of which I have seen a few instances; the ulcer is shallow, of uniform depth,

with a sharp-cut edge, the whole looking as if a piece of skin had been punched out, and resembling Paget's disease; in these cases, there may be some healing in one part and ulceration in another, or even temporary cicatrisation of the whole under simple protective treatment. In one such case, a woman of eighty, the more typical form, with raised, rolled edge, and deep ulceration, subsequently developed on the cicatrised surface, and about two years later appeared the crateriform ulcer to be presently described. The superficial variety is said to be more frequent on the temples* and forehead, and may be deep in one portion.

The ulcer is very slightly, if at all, spontaneously painful. Occasionally,† typical epithelioma has developed on typical rodent ulcer, and then all the secondary consequences of the more serious disease may supervene. Apart from such an accident, rodent ulcer may go on, if left undisturbed, for ten, fifteen, or twenty years.

The following represents the common run of cases, except as regards age and position:—

A gentleman noticed at the age of twenty-four a flat, slightly raised, soft, reddish, mole-like growth, the size of a shilling, on the side of the neck; it remained unaltered for eleven years, when, after being chafed by his collar, it began to ulcerate, and at the end of nine years more was only two inches by one and a quarter in area, and presented the typical characters of rodent ulcer as seen in its more common position on the side of the nose.

Although it is true that the vast majority of cases (seven-eighths, Bowlby) are situated on the upper two-thirds of the face, a few occur in the lower part of the face, and in rare instances it occurs quite away from the face and neck. I have seen it affecting the ear and nape and just above the sacrum. Bowlby also records it on the back, J. Hutchinson jun. on the forearm and in the groin; and I have also had a groin case which developed from a hair follicle, Pigg one in each groin, Rolleston near the umbilicus, B. Robinson on a male breast, and C. Fox on the sternum.‡

* *Vide* case of Leader, fig. 3, *loc. cit.*, Author's Atlas.

† Bowlby disputes this, doubting even its possibility, and speaks of rodent ulcers with round lumpy edge as well as the large tumour referred to with rodent structure.

‡ *Path. Soc. Trans.* for 1893, 1894, 1896, and 1898.

Rodent-like epithelioma is generally single, but may be multiple. I have seen two rodents on the face twice; three once. Bowlby met with a case with six rodents, five on the face and an enormous one on the back, and Colcott Fox's case had five on the face and scalp.

A unique mode of development in my experience was the formation of a yellow plaque* on the temple of a woman, which began when she was thirty-five. It began as a white spot the size of a hemp seed, but when first seen was a well-defined disc the size of a shilling, slightly raised, quite flat and uniform, and of distinctly lemon-yellow tint, with a few small dilated vessels converging from the periphery, and enlarged very slowly and underwent no other change. After three and a half years, when it was the size of half a crown, it became more prominent at the border in the lower part and ulcerated, and its rodent ulcer nature was then diagnosed. It was excised well beyond the growth in January, 1899, but recurred again and again, the last operation in January, 1902, being the fourth. Histologically it was a typical rodent.

Under the name of "**crateriform ulcer**" † Hutchinson described a variety of malignant epithelial ulcer, which affects the same regions, on the upper part of the face, as ordinary rodent ulcer; it occurs in the same class of people, but runs a much more rapid course, growing as large in a few months as ordinary rodent would in as many years. It begins as a bossy, rounded lump, which rapidly attains a considerable size, and presents a somewhat conical summit. At this summit, ulceration takes place, and with exceedingly little suppuration or obviously destructive inflammation, a cavity forms. The walls of the crater thus formed are very thick and firm; the growth is much less vascular and less succulent than that of rodent, and while it is easy to scrape the latter away, it is impossible to do so with the crateriform ulcer. It has no tendency to fungate or become

* The case was shown in the plaque stage at the Dermatological Congress in London in 1896, but no one could then make a diagnosis.

† *Path. Soc. Trans.*, vol. xl. (1889), p. 275, with coloured illustrations of three cases. In F. J. Behrend's *Atlas* (Leipzig: 1839), this affection is depicted under the name of cancer globulosus, plate xxiii., fig. 5. The lesion is on the side of the nose near the inner canthus. It is evidently copied from Rayer's *Atlas*, plate xiv., fig. 6, where it is called cancer tubercule ulcéré.

warty. Nearly all the cases that I have seen have developed on a previous rodent ulcer of the ordinary type, but Hutchinson has met with them as primary growths, and the following is evidently a case of the kind. A woman, æt. thirty-three, noticed, five months before she was seen by me, a small nodule at the right inner canthus; it enlarged to the size of a large pea, and then broke down in the centre, and looked exactly like a rodent in the wart stage which had just given way, and such it was diagnosed to be at the Dermatological Society, even by Hutchinson himself. On removal, however, its structure was found to be exactly that of typical epithelioma. All the "crateriform ulcers" hitherto examined have been found to be of the typical epithelioma, and not of the usual rodent ulcer type of structure. The case Fig. 4. in my Atlas, from the history, began as a rodent; unfortunately, the specimen was lost before it was examined microscopically. Whether these secondary cases are true epitheliomata or not, when once a rodent takes on this condition it grows with great rapidity compared to its former indolence.

Etiology.—I have analysed 50 consecutive private cases and 25 hospital ones, all in my own practice. Of these, in private there were 32 males to 18 females, while in the hospital there were only 10 males to 15 females, together this would make 42 males to 33 females. In Bowlby's 66 cases collected in the surgical department of St. Bartholomew's there were 40 males to 26 females, so that as regards sex the males predominate as about 5 : 3.

The age of onset* is of interest in my 50 private cases, where this point could be determined most accurately. One began under 30, one under 35, 7 between 35 and 40, 14 began between 40 and 50, 10 between 50 and 60, 9 between 60 and 70, 8 between 70 and 80. Altogether there were 9 under 40, and 41 over that age. The hospital cases were in the same ratio, 5 under to 20 over 40. Bowlby's figures give a greater proportion under 40, viz., 26, to 40 over. Moreover, while he had only 9 out of 66, I had 18 out of 50 which began over 60.

* Norman Walker, without stating the number of his cases, says rodents usually begin about the age of 40, and thinks that statistics to the contrary have only regard to the age of the patient when first seen. The above shows that is not the case, only 4 were under 40, 9 came first when 40—50, and 36 over 50.

Speaking generally, it is a disease which usually commences after 40 and is rare under 30.

Roger Williams* gives the average age as 44 for males, and 42 for females, mine work out much higher.

The earliest date of onset I know of was 12 in a case of Sequeira's. The latest æt. 87.† Bowlby, Roger Williams, and others have also recorded cases under 20. Local irritation of an apparently innocent abrasion or pimple is often the starting-point of the disease, and even when there is a true rodent nodule, it may remain without ulceration for years, if it is not irritated nor injured. A certain number date from a local injury; a very few from unpigmented or other moles; a few from scars. Beyond this we are ignorant of its causation. A cancerous family history is not a factor as it is in epithelioma.

Pathology.—All are agreed that it is a cancer of epithelial origin, but opinions vary as to its nature. Nearly all ‡ Continental writers regard it as a variety of epithelioma, and this view is supported in this country by Moore, Hulke, Hutchinson, and others, and by Collins Warren and his followers in America. Investigators have differed as to which of the appendages of the skin have given origin to it. Thus Thiersch and Butlin and Paul § (chiefly) believe that it starts from the sebaceous glands, Thin and Norman Walker, from the sweat glands, and Tilbury and Colcott Fox, Sangster and Hume and Bowlby, from the hair follicles.

* The details of his figures are in the Middlesex Hospital Reports for 1888. In his youngest case a pimple appeared on the left temple at the age of fourteen, which soon broke down; it took eight years to reach the size of a sixpence, but in five more was as large as a half-crown; it was then cauterised, and spread rapidly; then it was scraped, and two years later had become epitheliomatous, and was again removed; she died of it at the age of thirty-six. *Brit. Med. Jour.*, October 18th, 1890, p. 895.

† One of Bowlby's cases. The patient was ninety-four when first seen, and on the lower part of the helix of the right ear was a hard nodulated growth the size of a fig, with rounded and uneven edges and irregular surface, but it was not ulcerated. It began as a pimple, was diagnosed as epithelioma, but had a rodent structure.

‡ Unna classes it as the styloid variety of his cylindrical form of epithelioma. The views of Continental writers generally are of less weight, as they see but few cases compared to English authorities.

§ Paul, *Path. Soc. Trans.*, vol. xlv. (1894), p. 164. From 33 cases, he considers it to be sub-epidermic chiefly from sebaceous glands, perhaps sometimes from sweat coils, never from hair follicles. In one of my cases in the groin, the growth certainly started from the hair follicles.

In the general discussion at the Pathological Society, while there was as much difference of opinion as ever as to which appendage could lay best claim to be the seat of origin, there were few dissentients from the proposition that it was a sub-epidermal growth with the structure of a glandular cancer quite distinct from the squamous celled epithelioma. Most admitted that the rete might be involved at a late period, and that then epitheliomatous growth and behaviour resulted.

Dubreuilh and Auché,* who have examined 50 cases, state that it usually starts in the pilo-sebaceous follicle at the level of the sebaceous gland. That in rare instances it starts from the



Fig. 57.—Rodent ulcer in the "wart" stage. Obj. 2 in., ocul. 2 in.

a, central mass of epithelial cells beginning to disintegrate; *b, b*, similar smaller cell masses imbedded in the fibrous stroma *c*; *d, d*, portions of sebaceous glands.

epidermis itself near the follicle, but that it never starts in the sweat glands.

Rodent ulcer may therefore be defined as primarily a cancer of the appendages of the skin, and probably does not arise exclusively from any one of them. As a late event, the rete may also be involved, but unless this happens the greater part of the growth is made up of granulation tissue, the epithelial proliferation being comparatively moderate.

The cells of rodent ulcers are undoubtedly smaller than those of any epidermic epithelioma, and Thin, in addition, draws the following distinctions: In rodent ulcer, the nucleus of the cells is fairly uniform in

* *Annales de Derm. et de Syph.*, vol. ii. (1901), p. 705. Abs. in *Brit. Jour. Derm.*, v l. xiv. (1902), p. 150. A good article of 74 pages.

size, the cell protoplasm is scanty and not granular, and the cell wall is not discernible; further, the cells never enlarge into the flat horny cells of epithelioma, they never become prickly cells, never form nests, do not retain the dye of eosine, soften in the centre of the cell masses by mucoid degeneration, and the cell infiltration and disorganisation of the corium are much less than in epithelioma, while the cell infiltration and mitoses do not go far beyond the cell growth.

Diagnosis.—It is not difficult to distinguish a typical rodent from a typical *epitheliomatous ulcer*. In the first, the ulcer is always away from mucous membranes on the upper part of the face; there is very little new growth, and much ulceration. The course is much slower, comparatively painless, and there is no lymphatic implication or secondary deposition; the edge of the ulcer is smooth, flat, or rounded, and seldom much raised.

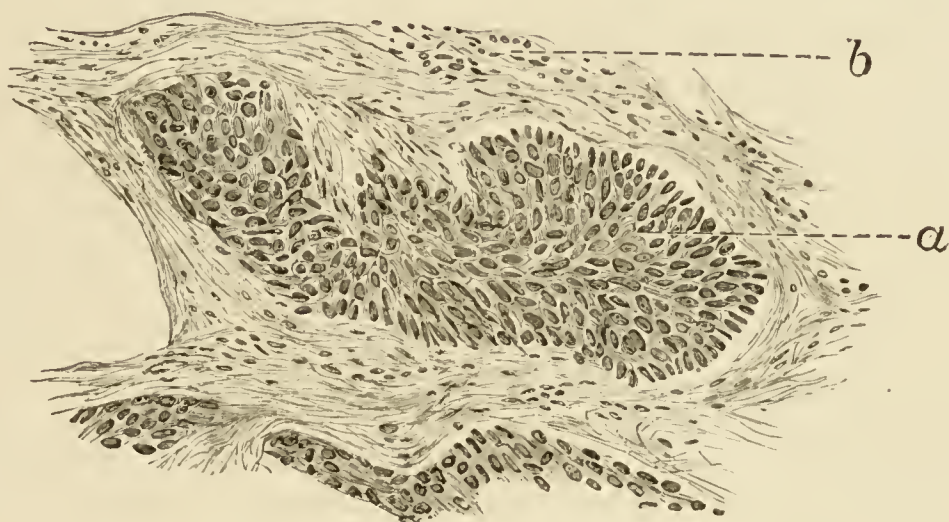


Fig. 58.—Rodent ulcer. A portion of fig. 57 under a higher power.

Obj. $\frac{1}{4}$ -in. Ross, ocul. 2 in.

a, a small epithelial cell mass imbedded in the fibrous stroma *b*, which is infiltrated with round cells. The outline of the epithelial cells is for the most part undiscernible, only the nuclei being visible.

In epithelioma, the ulcer is generally on or near a mucous membrane, the new growth always predominates over the ulceration, the course is much more rapid, it is often very painful, and sooner or later it involves the lymphatics, and even affects internal organs, and a warty-like growth is often present at the edge of the ulcer. When, however, epithelioma is quite away from the mucous membranes, its course is often very slow, with but little tendency to lymphatic implication, and the amount of new growth is less, and it then becomes difficult, sometimes impossible, to speak positively as to the nature of the ulcer. This is well exemplified in the case related above under Crateriform Ulcer.

From *syphilitic* and *lupus vulgaris* ulcers, the age of the patient, its origin from a single nodule, the very slow course, and its being nearly always single, the absence of deposit in the surrounding tissues, and the very scanty discharge, would distinguish it. The same distinctions hold good between rodent and strumous ulcers, except that there is no induration in the latter.

The rodent nodule may be mistaken for a soft wart or small fibroma. The age and development of the growth, its shining, waxy aspect, and the almost invariable presence of dilated vessels over it should seldom leave any doubt.

Prognosis.—Although, as a rule, very slow in its progress, if left to itself, it spreads either continuously or with short intervals of quiescence, and besides producing wide and deep destruction, will eventually exhaust, and, directly or indirectly, kill the patient. Persevering treatment may, however, effect a perfect cure; and I have seen a case of an old woman who had two ulcers, one of which healed permanently. Temporary healing is quite common. In a case of extensive ulcer, with exuberant growth at the border, a great portion healed soundly under iodide of potassium, though the rest, which looked the same, had a typical rodent aspect under the microscope.

Treatment.—Like ordinary epithelioma, free removal of the ulcer, going well into the healthy tissues round, is the only safe course; its synonym, “*noli me tangere*,” is a standing warning against half measures, which only irritate the ulceration into greater activity.

The knife, erosion, caustics, and the galvano- or Paquelin's cautery, are the means to be employed, and of these, one or other of the first two is generally preferable, according to the position. After erosion which should only be employed where excision is impracticable, it is safer to swab the part freely with chloride of zinc solution, ʒj to the ʒj of water, or, better still, the application of the Middlesex chloride of zinc paste (Caustics, Fig. 11), and although recurrence is very likely to take place in some part, if a similar treatment be resorted to without delay, complete eradication may generally be obtained. In extensive ulcers removed with the knife, Wolfe's* method of transplantation

* Esmarch, *Lancet*, June 8th, 1889, and A. Ceci, *Brit. Med. Jour.*, April 16th, 1892, illustrated with portraits of successful cases, show the advantages of the method.

from the arm or other convenient part may be employed to replace the removed portion. Where operation is refused, Unna's resorcin plaster may be tried, renewing it each day. Boeck, Unna, and others have been successful with this method. In the use of caustics and other remedies, the observations on the treatment of epithelioma may be referred to. The "crateriform ulcer" of Hutchinson requires free excision without delay, and then it is not likely to recur.

Where operation is refused or is otherwise unsuitable the Röntgen rays are a good alternative for many rodents. A ten-inch coil, a six-inch tube, a mercurial jet interrupter are the apparatus required. All but the ulcer are protected by a lead foil mask, the tube should be about four inches from the ulcer, and a current of four ampères employed. From ten to fifteen daily exposures of ten minutes each are usually required, stopping at once if any erythema round is produced. The ulcer generally heals very satisfactorily, but requires watching, as it is very seldom that permanent cure is obtained except by repetition of the exposures though a smaller number than at first are usually sufficient.

The Finsen light has also been used with success, but the results have not been so good in most cases as with the Röntgen rays.

SARCOMA CUTIS.*

Sarcoma of the skin is generally due to metastasis,† or invasion from other parts or organs, but it may be primary in the skin structures, single or multiple, pigmented or non-pigmented. They exhibit a tendency to general spreading and metastasis to glands and internal organs, and lead to the death of the patient.

Clinically, they may be divided into pigmented and non-pigmented sarcoma, the latter of very variable histology.

They are round, spindle-celled, or giant-celled,‡ with a delicate reticulum, and numerous vascular tunnels through them.

* Unna's *Histopathology*.

† "Sarcoma and the Sarcoid Growths of the Skin," by James C. Johnston, a good thoughtful article, *Brit. Jour. Derm.*, vol xiii. (1901), p. 241.

‡ The giant-celled are said to be derived from the bone marrow, and therefore secondary, but I am not sure that this is always true.

Another group of malignant tumours, but differentiated from true sarcoma, are those histologically characterised by lymphoid cells, in which are included leukæmic and pseudo-leukæmic (Hodgkin's) tumours and the malignant lymphoma.

A second group is called "Sarcoid," a sort of limbo for cases of doubtful pathology, which is sought to be established by Kaposi, Boeck, Johnston, and others. It includes multiple idiopathic hæmorrhagic sarcoma, sarcomatosis (Kaposi), and multiple benign sarcoid (Boeck). Clinically and histologically they have not much relationship to each other, and I have also placed here the obscure "Mortimer's malady."

Melanotic Sarcoma is the most common form, and all melanotic growths have for a long time been considered as of this nature. As already mentioned, however, Chambard, J. Hutchinson jun., Unna, and Gilchrist have recently shown that this is not the case, and Unna states that *all* growths with metastasis which starts from pigmented moles are really melanotic carcinomata, and have an alveolar structure, and should be called nævo-carcinoma.* The clinical behaviour is the same as the form which is still admitted to be melanotic sarcoma, which usually starts from the choroid coat of the eye, but the back and sides of the hands and feet, and the genitalia, are common positions for the primary growth; on the foot, the common position is "under the middle of the tread of the heel," perhaps from injury from a nail in the boot. The following case, although more rapid in its course than usual, illustrates the clinical features.

Mrs. K., † æt. fifty-eight, with a strong family history of cancer, noticed what she thought was a blister from friction on the outer side of the right foot, below the malleolus. From this developed, in the course of five months, a fungating, slightly pigmented growth, the size of a crown-piece, which was excised by Mr. Rivington, and proved to be a melanotic sarcoma; eight days later, melanotic growths appeared on the outer side of the right thigh; in a week more, they sprang up round the wound of

* Whitfield, *Brit. Jour. Derm.*, vol. xii. (1900), p. 267, discusses the question with most of the references. To these may be added Hodara's and Audry's paper, and one by Tailhefer, also published in the *Jour. des. Maladies Cut.*, vol. xi. (1899), p. 65; vol. xiii. (1901), p. 798; and vol. ix. (1897), p. 129 respectively.

† Plate lxxvii., fig. 1, of my Atlas represents her case.

operation, and from that time fresh tumours appeared daily, but almost confined to the right lower limb, the lymphatic glands remaining free; a few came on the trunk and head of the same side. Each tumour first made its appearance as a flattish papule, the size of a hemp seed, and the colour of a half-ripe mulberry; in two days it showed signs of pigmentation, and very soon became of a bluish-black colour, like a Hamburg grape, discoidal, of any size, up to about half an inch in diameter, and raised about an eighth of an inch above the surface. The tumours by continual multiplication became confluent in some places, and then formed large, flattish, irregularly lobulated black masses, which soon broke down, fungated, and discharged sanguineous pus, or at times bled freely. She died, with symptoms of visceral implication, in less than four months after removal of the primary tumour.

The following case illustrates another mode of development. A surgeon, æt. forty-five, had noticed a pigment spot under the clavicle, half an inch across, twenty-two years ago; it grew slowly for twenty years, but more rapidly a year and a half before I saw him, when it was an oval patch two and a half by one and a half inches, slightly raised with irregular border of deep black colour for one-eighth of an inch, then a purplish zone, and a nearly normally coloured centre.

Six weeks before he came, a small part which had been slightly sore and scaly for a year ulcerated, and formed a granular elevated patch half an inch in diameter, and there was slight enlargement of the glands in the axilla. The patch was excised, and was found to have a pigmented mole structure as a whole, and there was also a point of pigmentation in one of the excised glands. The fungating growth was what is usually classed as melanotic sarcoma, but the epithelial elements showed that it was a melanotic carcinoma with alveolar structure. There was very little pigment in the growth itself, doubtless from its being only six weeks old. In the generalised cases, a slate blue pigmentation of the whole surface simulating argyria* sometimes supervenes towards the end, associated with melanuria. (Wickham Legge, I. Trumbull's cases.)

A special and insidious form is that described by Hutchinson

* A case with many peculiarities and a different form of pigmentation was published by Abraham in *Brit. Med. Jour.*, January 2nd, 1892, p. 13.

as “**melanotic whitlow**” ; * at first, it appears as a chronic onychitis often due to injury, with very little pigment, like a “lunar caustic stain,” and that only at the border ; it very gradually develops into a fungating tumour, with still only a little pigment ; the nail is thrown off, and generalisation soon occurs. Nunn † reported a case in 1880.

Galloway ‡ read a good paper on the subject at Montreal in 1897, based on a case in which the disease was just commencing on the foot. It would probably have developed like the first text case. See also Lentigo Melanosis.

The treatment for melanotic sarcoma is the same as for the non-pigmented form, but the prognosis is rather worse. In all melanoses, prevention is emphatically the best course, and every melanotic deposit, whether of mole or other origin, should be

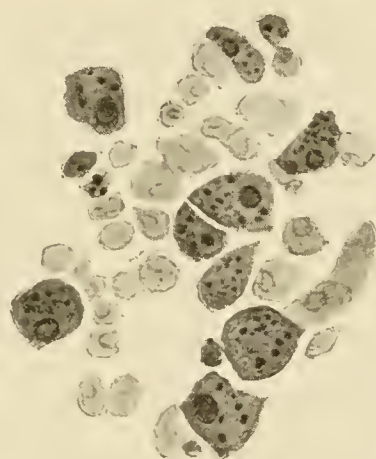


Fig. 59.—Pigmented cells of a naevo-carcinoma. Zeiss D.D. 10-inch tube.

promptly and widely removed as soon as it shows any sign of activity.

In the **Non-pigmented Sarcoma Cutis**, the tumours may be in enormous numbers, amounting to several hundreds, or there may be a few only, or even a single one. In size, they may be from a lentil to a bean, or larger, firm to the touch, not necessarily tender, and the skin over them is reddish or brownish or bluish-red, and perhaps slightly scaly. Very many of the cases reported as sarcoma cutis are really subcutaneous, and the skin over them more or less movable, and often of normal colour. Where they are very thickly placed they may form plates or masses, with a more or less nodular surface. There are, however, scarcely two cases alike in either clinical features or structure.

* *Brit. Med. Jour.*, March 13th, 1886.

† Melanosis of the little finger, *Path. Soc. Trans.*, vol. xxxi. (1880), p. 299.

‡ *Brit. Med. Jour.*, October 2nd, 1897, p. 873, with numerous references.

A case I saw with my colleague A. Barker, is an example of a single tumour in the first instance.

A round-celled sarcoma developed on the site of a "Scinde sore" on the cheek of a young army surgeon three months after the development of the sore. Seven months later it formed a fungating mass one inch across, and a third of an inch above the skin, from which it rose abruptly, but infiltration round could be felt for a quarter of an inch. He died within a month of its removal from visceral generalisation.

T. Norton records a very similar tumour on the leg with oozing of blood. Glandular infection had taken place before its removal and generalisation produced a fatal result in eight months.

The following is an instance of a moderate number of tumours: a healthy-looking man, æt. forty-seven, noticed on his right cheek what he took to be a small mole, which irritated him and was scratched, and then grew to the size of a hazel nut. This was removed at the county infirmary, but grew again, and when seen fifteen months from the first onset was as large as ever, and there were numerous smaller secondary growths, extending nearly to the angle of the lower jaw. Many of the smaller growths coalesced with the base of the larger one, but there were isolated hemp-seed to pea-sized tumours beyond it. They were of a livid colour, and the central one was scabbed and bled easily. The tumours were firm and not tender, but were sometimes painful. There was a solitary enlarged gland under the angle of the jaw, but the general health was unaffected. The tumours were excised by Mr. Heath, but in six months the man returned with a few fresh tumours on the cheek, and enormous enlargement of the sub-maxillary lymphatic glands. The date of his death is unknown. The tumours excised first by Mr. Heath were those of alveolar sarcoma, those of the second recurrence were round-celled sarcomata.

In a case of multiple sarcoma in a man of sixty, brought to me by Dr. Peter Cooper, the lesions were erythematous, slightly raised discs from half to an inch in diameter, the smaller flatly convex, the larger flatly concave, firm, and more tumour-like to the touch than to sight; in many of them, the follicles were very prominent. There were no sensory symptoms. A few only appeared first on the chest, but after about nine months they began to develop more rapidly, and in three months were very

numerous all over the trunk, and upper segments of the limbs, and slightly on the lower segments; later the testicles, lymphatic glands and viscera became involved, the skin tumours disappeared, and the patient died fifteen months from the first appearance of the skin growths. From the general and extreme enlargement of the lymphatic glands, lympho-sarcoma was diagnosed, but no microscopical examination was allowed.

There is a rare form of spindle-celled sarcoma, described by Hutchinson as "**recurrent fibroid of the skin.**" "It begins usually in the lower extremities, grows slowly at first, but recurs rapidly and persistently after removal, however wide the incision, and

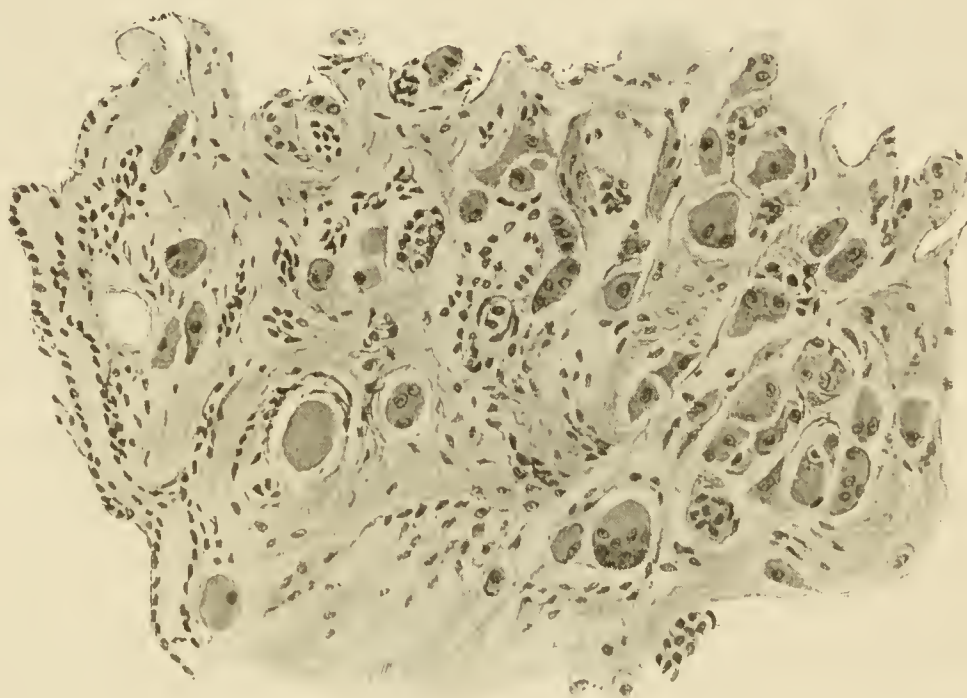


Fig. 60.—Myeloid cell sarcoma from a tumour excised from the right elbow.

ultimately generalises, fungates, forms blood cysts, and destroys the patient."

In another form of **Fibro-Sarcoma*** a single tumour may be present for many years, growing very slowly, and when multiplication takes place it is limited to the neighbourhood of the original growth for a long time, ultimately the tumours become widely spread.

A remarkable case, with myriads of tumours with "myeloid cell" structure (fig. 60), was shown by me at the Dermatological Congress in London in 1896. The tumours developed soon after an attack diagnosed as acute rheumatism in a man, æt. thirty-nine. They

* Ionides showed a case of this kind to the Derm. Soc. of London, *Brit. Jour. Derm.*, vol. viii. (1896), p. 439.

appeared first on the hips on March 3rd, then about the elbows, then all over the back, and then on the legs. On March 6th there were a few on the face. When I saw him with Mr. Sworn on April 29th there were congeries of coalesced tumours on each elbow forming a nodular mass some two inches in diameter; near this mass were isolated tumours from a hemp seed to a filbert in size, but the majority were roundish, very distinctly raised, of a brownish-red colour, and of firm consistence, but quite painless and not tender. Over the buttocks and hips, there were many scores of similar growths, a few of them three-quarters of an inch in diameter; near the anal cleft there was a uniform brick-red infiltration in which tumours were not traceable. Nearly the whole of the back below the spines of the scapulæ was a mass of nodular infiltration of a purplish-red tint made up of myriads of small tumours. On the trunk in front, there were only a few tumours, but there was a purplish infiltration like that of the back, at the lower part of the abdomen. There were very numerous tumours at the lower part of the buttocks, a moderate number at the back of the thighs, and scarcely any below the popliteal spaces. There were only a few small tumours in front and inside the thighs, but some were like those on the elbows and the knees.

There was effusion of fluid into the sheaths of the tendons at the wrists, knees, and tuberosity of the tibia. His wife said there were a few lumps in the scalp as far back as July, 1895, and that they had increased in size and number since. A tumour evolved quite suddenly in a night, enlarged to a pea or bean, and sometimes involuted again leaving brown spots. The patient was not cachectic, but as he had much pain in his joints, salicin in fifteen-grain doses three times a day was prescribed. In a week it was noticed that many of the tumours had become smaller, and in a week or two more scores of them had disappeared, and many others were in process of absorption, and cavities could be felt in the larger ones.

The infiltration in the back diminished greatly, and when shown at the Congress a very large part of the disease had disappeared. Unfortunately he has been lost sight of since.

Kœhler and Johnston* report a case very like the above clinically, but histologically it was a small spindle-celled sarcoma.

* "Idiopathic Multiple Sarcoma of the Skin," *Amer. Jour. Cut. Dis.* vol. xx. (1902), p. 5.

Perrin and Leredde * report a generalised case of giant-celled sarcoma, but the clinical features were different from my case, and the lesions much less numerous.

Hallopeau and Jeanselme had a case which began in the hand, and spread along the lymphatics simulating an infective lymphangitis. But these examples are enough to show how variable are the clinical symptoms, except in one particular, that sooner or later, and in the majority sooner, the tumours generalise in the viscera, and the end is then near at hand.

In rare instances, multiple sarcoma may be congenital. Dr. Jordan Harvey brought for my diagnosis the dead body of an infant, in whom there were nodular growths at birth, about seventy pea- to bean-sized nodules of purplish colour over the body and face. Pernet's † examination showed them to be small round-celled sarcomata with large vascular tunnels in them. Ramdohr had a case with twelve growths on the body and a few on the face and in the kidneys.

Treatment had always been futile, a fatal issue appearing inevitable, until Köbner tried arsenical injections. Fowler's solution was used, diluted one to two of distilled water. The first case was a girl of eight, who had more than three hundred tumours, from a hazel nut in size downwards, scattered nearly all over the body. Two and a half to four drops of the solution were injected once a day, and after three months, the dose was raised to seven and a half and then to nine drops. The tumours gradually disappeared, leaving at first brown, slightly scaly patches, and finally even these disappeared: the child was quite well a year later.

A similarly successful case, in a woman, æt. thirty-one, is reported by F. D. Shattuck. The disease was first observed in the submaxillary lymphatic glands, and subsequently enormous numbers of pea-sized tumours developed in the skin. The dose was at first four, and later six minims of Fowler's solution diluted; the treatment was continued for about eight months, and she was quite well a year later.

Although, as was to be expected, this treatment has failed in many instances, others in addition to Köbner and Shattuck have

* *Annales de Derm. et de Syph.*, vol. vi. (1895), p. 1038. Abs. *Brit. Jour. Derm.*, vol. vii. (1896), p. 147.

† *Path. Soc. Trans.*, vol. liii. (1902).

had equal success, amongst which Sherwell's case may be specially mentioned.* Lassar† has gone further, and brought forward a successful case of melanotic sarcoma, treated by liq. arsenicalis internally; and Pospelow has had a good result in a case of round-celled sarcoma, in which he gave both the solution and Asiatic pills. My own case of involution of tumours under salicin is in the same direction, and suggests a microbic ‡ origin for sarcomata.

Coley's fluid is a solution of erysipelas toxin with that of bacillus prodigiosus, and was suggested to him by the amelioration often produced by an attack of erysipelas. It was recommended to inject the fluid subcutaneously, beginning at half to one minim and increasing to six minims. Febrile reaction occurs and sometimes dangerous symptoms. While there have been some successes, the general opinion is against its employment, and all events it should be reserved for desperate, inoperable cases.§ It is possible that an improvement in the character of the fluid, and in the method of using it may give a better prospect.

M. C. Beretta|| brings forward evidence of amelioration from anti-cancerous serum injection, but this requires further investigation. At all events there are indications that the treatment of sarcoma is not quite so hopeless as was formerly the case.

Sarcoma Capitis, or Endothelioma Capitis (Turban tumours). A peculiar form of tumour, in rare instances attacks, and is limited to the hairy scalp; in extreme cases, covering the whole scalp like a wig.

The first case on record is by Marrant Baker¶ under the name

* Sherwell, Abs. *Brit. Jour. Derm.*, vol. v. (1893), p. 125, original in *Amer. Jour. Med. Soc.*, October, 1892.

† Lassar's case is reported in *Annales de Derm. et de Syph.*, vol. v. (1894), p. 1118.

‡ This hypothesis is strengthened by the existence of infective sarcomata in dogs, which can be transplanted. B. Smith and Washbourn, *Brit. Med. Jour.*, December 17th, 1898, p. 1807.

§ *Vide* Sheild, Butlin, Moulin, Battle, and Shattuck, etc., *Brit. Med. Jour.*, January 23rd, 1897, p. 193, January 30th, p. 299, August 13th, and December 3rd; and *Lancet*, November 19th, 1898, *Med. Soc. Report*, 1898, etc.

|| Annotation, *Lancet*, August 27th, 1898, p. 565.

¶ Museum of Coll. of Surg., Skin Sect., No, 313-14 of 1895 Cat. Two wax models. There are also models and drawings in the St. Bart.'s Museum of this case.

of "withering sarcoma of the scalp." The patient, a man, æt. twenty-four, received a blow on the head, and the tumours developed soon after, one ten inches in diameter was removed, and proved to be a fibro-sarcoma. Some of them underwent involution.

Kaposi* showed the model of a similar case with billiard-ball to orange-sized tumours, very numerous and forming a wig-like covering over the entire scalp; the tumours had been growing for forty years in a man, æt. sixty; he had some similar tumours on his back. His daughter had for a year noticed pin's-head to pea-sized tumours developing on the head, face, and trunk, which were proved histologically to be of the same nature, and Kaposi called them endothelioma congenitale. He referred to a case of Poncet published in the *Revue de Chirurgie* (1890).

Oro's† case, also after injury, was a spindle-celled sarcoma in a man, æt. seventy-four, and was more like Marrant Baker's case, but is described as a single tumour with lobes which covered the head like a turban.

In a case reported by Cohn‡ of Portland, U.S., the patient was a woman, æt. fifty-two. The growths had been forming since she was twenty-four years old, and many had been removed; a grandmother was said to be similarly affected. Structurally they consisted of oval-cells in alveoli, and of fusiform cells and fibrous tissue. Barrett§ of Melbourne has published another case of a woman, æt. sixty; and two of her daughters had similar growths. He called them multiple sudoriparous adenomata. Spiegler's|| paper on Endothelioma of the Skin, without giving a new case, focusses five of the previously published cases—Kaposi's (two: father and daughter), Poncet's, Ancell's, and Cohn's.

Their family prevalence suggests that they are really of congenital origin though often late in development. They are not malignant in their behaviour and are not true sarcomata, and some say they are "endotheliomata."

* *Comptes Rendus de Cong. Int. Rome*, 1894, p. 135. Illustrated in plates ccxxxi. and ccxxxii., Kaposi's Hand Atlas, as a form of Molluscum.

† *Giorn. Italiano d. mal. ven. e. d. Pelle.*, Fascic. II., 1896.

‡ *Amer. Jour. Cut. Dis.*, vol. x. (1892), p. 393.

§ Barrett, *Brit. Med. Jour.*, February 6th, 1892.

|| Spiegler, *Archiv f. Derm. u. Syph.*, vol. 1. (1899), p. 163, with illustrations.

Idiopathic Multiple Hæmorrhagic Sarcoma * is very rare in this country, only two indisputable cases having been reported, both by Pringle. Kaposi, however, who first described the disease in 1879, has had thirty cases; in Naples it is not so rare, de Amicis having had over fifty cases; and it is frequent in Northern Italy. In Russia,† Stoukovenkoff of Kief had ten, and others have been met with. Cases in other European countries have occasionally been reported, and a few in America by Wigglesworth, Fordyce,‡ Jackson, Breakey, Hyde, etc. Sequeira § has published what he considers to be a case of this disease, while admitting that it is of the same type as those cases called by Hutchinson **symmetrical purple congestion of the skin** (*Vide* p. 105).

Tandler's || case appears to me to belong to erythema elevatum diutinum (*vide* p. 104).

The pigmentation is due to hæmorrhages into the skin. The following account is taken chiefly from those of Kaposi and Funk.¶ It attacks first the palms, soles, or backs of the hands and feet, either simultaneously or with short intervals, then the legs and forearms, the thighs and arms, and reaches the face and trunk in two or three years. The ears are sometimes affected at an early stage. It commences, with or without preceding oedema, as diffuse cyanotic spots which pass into infiltrations, and these into nodules; or it may commence as nodules.

They are roundish, from a shot to a pea or bean or even a cherry in size, reddish-brown or bluish-red, irregularly discrete or in small or large groups. They are tender, and their development is attended with pain, which may radiate up the limb, and

* Kaposi himself has proposed to substitute "hæmorrhagic" for "pigmented" as the name for this disease to prevent its being confounded with the other form of pigmented sarcoma. Plate iv. of the *Internat. Atlas* gives a good illustration and references to previous cases, by Schwimmer.

† Semenow read a paper at the Moscow Congress, 1897, on these ten cases, of which there is a good abs. in *Brit. Jour. Derm.*, vol. x. (1898), p. 64.

‡ Fordyce's cases are in *Jour. Cut. and Gen. Ur. Dis.*, vol. ix. (1891), p. 1, coloured plate of the extremities. Hardaway, in vol. i. (1883), gives coloured plate of face.

§ Sequeira, *Brit. Jour. Derm.*, vol. xiii. (1901), p. 201, with coloured plate. Histologically the growths were inflammatory and not sarcomata.

|| *Archiv f. Derm., etc.*, vol. xii. (1897), p. 163, coloured plate.

¶ Funk, *loc. cit.*, gives many exceptional cases, and includes a very mild type. *Kaposi*, Besnier-Doyon edition contains many references.

there may also be pain from the tension, for besides the tumours, in some cases, there is a diffuse elephantiasis—like thickening of the extremities, especially of the legs, so that the limb is stiff and distorted, and in the case of the hand over-extended, so that the patient is completely crippled. When the trunk is affected—and the whole cutaneous surface may be involved—the skin and subcutaneous tissue are diffusely infiltrated, hard as a board, and immovable, with a nodular surface, and of a dark violet-brown or plum colour (Funk). In one-fourth of the cases, nodules of infiltration are present on the glans penis, prepuce, and scrotum.

The tumours never ulcerate and seldom suppurate, but may disintegrate and disappear, leaving pigmented scars, or, where they are in patches, the centre only undergoes involution. This may occur in even a single nodule. On the trunk and face, the surface may be eroded, and expose a blood-infiltrated tissue, which may become warty or fungoid from irritation. Dilated vessels and hæmorrhages round the nodules are common. In middle-aged persons, the general health may be but little affected for several years, except from the itching, burning, or pain in the extremities, but fresh nodules continue to form, and ultimately the mucous membranes are affected, when the downhill course is often rapid. "Dark bluish-red patches, diffuse infiltrations, or little nodules arise on the gums, palate, or uvula; the tonsils become swollen, the patient becomes markedly anæmic, emaciated, and feverish. The lymphatic glands, spleen, and liver become considerably enlarged. In this stage, whole groups of nodules sometimes ulcerate, and deep, ichorous, extremely offensive ulcers are formed. The neoplasms of the mucous membranes ulcerate still more quickly" (Funk). Marasmus, bloody diarrhœa, and hæmoptysis close the scene, and post mortem, similar tumours are found in most of the viscera, especially in the descending colon, where they tend to slough. The ordinary duration is from three to five years, but in young persons, death may occur in the first, second, or third year, while six or even twelve years may elapse in older people, before the health gives way. Recovery does, however, occasionally take place. Hardaway's* and Funk's case recovered completely. Mackenzie's case, which had previously been under Pringle, was a Galician Jew, æt.

* Hardaway, *Four. Cut. and Gen. Ur. Dis.*, January, 1890.

forty-five, whom I had the opportunity of examining on several occasions. After presenting all the typical symptoms, and having one leg amputated, he seemed to be in a hopeless condition, but ultimately, not apparently as the result of treatment, he improved, and when shown to the Dermatological Society in 1892 appeared to be in a fair way of recovery, large numbers of the tumours and the elephantiasis of the limbs having disappeared, and ultimately he got quite well, but with the hands permanently *en griffe* with much over-extension at the knuckles.* In Jackson's case, the fingers were permanently flexed on the palms.

De Amicis, who has had even more cases than Kaposi, recognises three stages: I. a period of infiltration forming plane maculæ. II. A period of tumour formation with telangiectases, angiomatous in character. III. a period of necrobiosis of the tumour and generalisation.

Etiology.—Most of the cases have occurred in middle-aged men, very few in women. A case of Kaposi's was seventy-three; several have occurred between twenty and thirty, and a few under twenty. Corlett (Cleveland, U.S.) had three cases in one family, the youngest two years old, and de Amicis had one of a child of five. A large proportion have been Polish and Galician Jews of the lowest class; but whether this is the result of their race, their habits, or surroundings it is impossible to say. Its frequency in Naples suggests the latter. Jackson's case dated from a frost bite, and Semenow regarded prolonged exposure to cold as an important factor.

Pathology.—Its pathology is quite unknown, but Fordyce and Wende advance plausible arguments, in favour of its being caused by an infective agent.

Anatomy.—Kaposi's and Stoukovenkoff's cases were chiefly small-celled growths which they called sarcoma, situated in the corium, riddled with vascular sinuses and containing small hæmorrhages, and free pigment granules, but Funk's, Schwimmer's, Fordyce's, and Jackson's cases were made up of spindle-cells closely interwoven, so that in cross-section they appear to be round cells.

The pigment is entirely due to the hæmorrhages, and therefore quite different from that of the other pigmented sarcomas. There are great numbers of new blood vessels, numerous mitoses, and an intercellular reticulum. Pringle found bacilli in the tumours and sweat glands, but other

* Pringle, *Photo. Club Atlas*, 1898.

observers have failed to do so. Semenow found changes in the peripheral nerves, and ascribes to them an etiopathological importance. De Amicis regards the disease as a granuloma; Sellei also takes this view, which, though not established, is probably correct.

Diagnosis.—The leading features are the commencement in the hands and feet of small painful plum-coloured tumours, followed by elephantiasis, deformity of the extremities, board-like indurations, and ultimately generalisation, with a usually fatal result. The diseases with which it may be confounded are at the commencement, the palmar and plantar scaly syphilide, and later in its course mycosis fungoides, syphilitic gummata, and the nodules of lepra and lupus.

Prognosis.—The majority of the cases have been fatal in from two to five years, but some have lived over twenty years (Brayton's twenty-five), and a few have recovered spontaneously, or as the result of treatment (Hardaway's, Funk's, Mackenzie's, Köbner's, and Pringle's).

It has many features in common with Hutchinson's "symmetrical purple congestion of the skin," and Sequeira regards the two affections as only variants of one disease.

Treatment has been unavailing hitherto, but although it failed in Schwimmer's and Fordyce's cases, Köbner's* treatment by injections of liq. arsenicalis deserves further trial, as several have had encouraging improvement after its free administration.

Sarcomatosis Cutis (Kaposi, third type). The following is from Kaposi's third American edition. The tumours may be very numerous on the trunk and limbs. They are bluish-red, flat or somewhat prominent, in defined patches of the size of the finger-nail, which on palpation are firm elastic nodules deep in the corium and even below it. Earlier nodules can only be felt, not seen. Sometimes the nodules are painful, at others only tender. There are no glandular enlargement, no blood changes, or other general defect. Two men got quite well with "methodical arsenic treatment."

In a third case, an old woman, who had had the disease for four years, there were about one hundred tumours on the upper part of the trunk. The nodules were pea- to nut-sized, hemispherical,

* *Berlin med. Wochensch.*, 1883, No. 2. See p. 641. Abs. in *Annales de Derm.*, vol. vii. (1886), p 189.

and firmly elastic; the small ones bright red, the larger bluish-red, smooth, shining, and tender. There were also some palm-sized flat raised plaques with a central depression and indented borders like the tomato form of mycosis fungoides; there were another hundred nodules over the rest of the trunk and a few on the limbs. After seven or eight injections of arseniate of soda, .02 gramme every second day, the majority of the nodules flattened and collapsed by half to two-thirds. Subsequently they continued to grow in spite of the arsenic; similar cases are on record, many cured by arsenic, but others fatal. Microscopically they were round-cell growths, sarcomata Kaposi called them, and different from lymphoma. Their greater depth in the cutis distinguishes them from mycosis fungoides.

Joseph* brought before the Berlin Dermatological Society a man, æt. thirty-two, on whom in a few months large numbers of tumours had developed over the whole body including the scalp. They began in the dermis, and some were as large as a cherry; the skin over them was reddened from networks of dilated vessels; and the microscope showed that between the fibres of connective tissue there was an infiltration of round cells with vesicular nucleus and nucleolus. He regarded them as one of the cases of sarcoma cutis which Kaposi was the first to call sarcoid, belonging to his Type III.

Multiple Benign Sarcoid (C. Boeck).† The following is his summary of the characters of the disease after relating the cases. He also says a case was shown, but not recognised, at the Dermatological Congress in London in 1896.

“The type case was a middle-aged, pale man, in whom were found groups of lymphatic glands much swollen, and on examination a slight increase in the number of white corpuscles. At the same time, there was a wide-spread, nearly symmetrical eruption of firm nodules on the head and extensor surfaces of the trunk and extremities. They ranged in size from a hemp seed to a bean, and the larger had irregular contours. They involved the whole skin and were movable with it. On the

* Reported in *Annales*, vol. ix. (1898), p. 492.

† C. Boeck, *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. xvii. (1899), p. 543, with coloured and photographic plates; also, “Weitere Beobachtungen über das multiple benigne Sarcoid der Haut.” Reprint from M. Kaposi's *Festschrift*.

scalp there was no infiltration, but only yellowish patches. The colour of the early nodules was bright red, becoming darker, and finally yellowish or brown. Slight scaling occurred on older lesions. They showed a tendency to peripheral spreading and central depression. On the face, they had a peculiar appearance with blue centre and yellow border—a feature present in all Boeck's cases. The nodules disappeared eventually, leaving, as a rule, a loss of substance in the skin, which was white on the face, yellow on the back, and darker at the periphery on the legs. Neither exudation nor ulceration ever took place. A papular eruption grouped like lichen planus was seen on the inside of the thighs. A tendency to develop on the site of an old injury should be remembered. The symmetry was not such as is found in affections whose localisation is evidently determined by central nerve influence. The disease seemed to be benign, and disappeared under arsenic or perhaps spontaneously. Compared with Mortimer's malady there were many points of resemblance; in the latter, there are essentially the same symmetrical eruption of nodules and patches, in the same localities, a slow peripheral spreading with central depression, and after long duration, spontaneous involution without ulceration and with loss of substance.

“Hutchinson's cases had good health. He does not, however, mention swelling of lymphatic glands nor the peculiar appearance of the face patches. In his case, there were diffuse subcutaneous infiltrations over the bridge of the nose and the ears. The nodules were, according to description and plates, more elevated than I have seen them. Future observation must decide to what degree these differences are essential.”

The histology was also unique. The areas of new growth might be described as perivascular sarcomatoid tissue, built up by excessively rapid proliferation of epithelioid connective-tissue cells in the perivascular lymph spaces, with very few cells of other kinds. The tumour soon begins to degenerate, and the tissue is atrophied, showing a network of branched connective tissue cells.

It should be remembered that true giant cells of sarcomatous type were found though rarely. Compared with other new growths of the skin, this must be said histologically to possess affinity to sarcoma, and also to the very rare cases of so-called

pseudo-leucæmia cutis, described by Arning and Max Joseph. The new growths here described nevertheless seem at present to be rather *sui generis*.

It should be particularly emphasised how different the histology of this process is from that of leucæmia cutis with its lymphoid tissue and small lymphoid cells, but the clinical resemblance is very close.

Mortimer's Malady (Hutchinson's).^{*} Hutchinson has met with four cases, two of them quite alike; the other two "probably allied." "The disease is characterised by the formation of multiple dusky red patches which have no tendency to inflame or ulcerate. They are very persistent, and extend but slowly. They occur in groups, and are usually on both sides and almost symmetrical.

"The multiplicity of the patches, their occurrence in groups, their bilateral symmetry, and the absence of all tendency to ulcerate or form crusts are features which separate the malady from lupus vulgaris."

The type case was a woman, æt. sixty-five, in whom the disease had existed for a year in August, 1894. The lesions were in symmetrical groups on her face and upper arm. They were much raised, sharply defined, of dusky red colour, and rather soft structure. Some had a slight exfoliative scaly crust but with no ulceration beneath, and though some of the patches were depressed in the centre there was no ulceration. Six months later, the patches had increased in number and size, and many had coalesced on the left cheek and brow and the lobule of the left ear had become involved like common lupus. The nose was swollen across the bridge forming a thick soft tumour, but without implicating the skin. Two years later, the patches on the left cheek still showed their nodular origin. Many of the nodules were involuting, especially on the left eyebrow and ear; and on the arms some had quite disappeared and left thin scars. In 1897, her condition was nearly the same, and her general health had never been affected.

His second case was a man of forty-five in whom it had been present several years on the face with very little change. His ears were much affected; there were large areas of scar without previous ulceration on the thighs and legs.

^{*} Hutchinson's *Archives of Surgery*, vol. ix., plate clii., p. 307.

There has been no histological investigation for comparison with Boeck's benign sarcoid (see that disease). The only case in my experience at all like it, was a man with infiltration over the nose and ears, and round tumours with depressed centres, but it differed in that many of the lesions broke down and ulcerated. The pathology of Mortimer's malady therefore remains for future investigation.

LEUCÆMIA CUTIS.*

Biesiadecki in 1876 was the first to describe tumours in the skin along with the general symptoms of leucæmia, anæmia, enlarged spleen and lymphatic glands, increase of white corpuscles and eventually hæmorrhages, etc.

His case was a man of thirty in whom nodules from a millet seed to a lentil appeared in large numbers on the face and back; they were slightly raised, movable with the skin, flat, pale red, and smooth for the most part, but some were scaly and others depressed in the centre and of lymphoid structure.

Hochsinger and Schiff record a case of a boy of eight months with similar nodules all over the body, but especially on the head and face. In this case, the nodules ranged up to the size of a hazel-nut, and were yellowish- to brownish-red.

Cases of this type have also been described by de Amicis, while Parvianovitch, Oliver, and Phillipert have reported cases of a different type, in association with leucæmia. In Oliver's case, soon after a crushing injury to the metacarpal bone, hard nodules formed under the right supraclavicular fossa, and ultimately there were about sixty hard tumours from a bean to an egg scattered over the trunk, and an ulcerated egg-sized tumour in the axilla; the overlying epidermis was movable but reddened in the other tumours, some of which became soft. The white corpuscles were enormously increased. At the autopsy, there were six orange-sized tumours in the enormous spleen. In Phillipert's case, which began on the temple in a woman, tumours of similar size formed in the head and face, the skin over them being smooth, glistening,

* *Literature*.—A large number of references may be found in Funk's "Clinical Studies of Sarcoma of the Skin," in *Rep. of the Second Inter. Cong. of Dermatology at Vienna*, and Unna's *Histopathology*, p. 621. Also Nékám, *Ueber die leukæmischen Erkrankungen der Haut*. L. Voss, Hamburg, 1899.

and chestnut brown ; and other tumours appeared on the mucous membrane of the nose, palate, and pharynx. There were nodules in the breast, but the rest of the skin was free ; towards the end the colour of the skin became like wax, and the tumours flat and shrivelled. Leontiasis of the face was present in this, and some other cases, *e.g.*, Gaillard's.

Hallopeau and Laffite* have observed a case which was accompanied by eczematous and lichenoid lesions comparable to mycosis, and at a later period, diffuse thickening and reddening of the skin, exaggerating the normal elevations and depressions of the skin, but, unlike mycosis, diffusing gradually in to the healthy skin without forming tumours. The subcutaneous tissue was implicated, with induration, the surface was smooth and symmetrical. In their case, the middle of the face was affected from the upper lip to the forehead with great swelling and redness and exaggeration of the natural folds.

In Neuberger's case there were only two solitary brown tumours symmetrically placed on the cheeks, and they were lobulated, firm, and grew slowly for several years.

A totally different type of case was described by Kaposi under the title of lymphodermia perniciosa. The disease began like a scalding, moist, and intensely itching eczema, and "gradually resulted in diffuse soft swelling and thickening of the affected parts."

Then cutaneous and subcutaneous, doughy or firm, in part ulcerating nodules developed, the glands and spleen enlarged, leucæmia set in, and death ensued. There was general *pallor* of the skin and face, ears, forehead, lips, and integument of the thorax, and the arms exhibited shapeless nodular thickening. All the lesions of leucæmia were found after death. This Vidal, Hallopeau, Paltauf, and myself regard as a variety of mycosis fungoides, a view which Kaposi himself admits is not improbable. The case I have described as type III. of mycosis fungoides closely corresponds with Kaposi's in many respects except that the skin was red, not white, but unfortunately I was unable to examine the blood, nor was there any autopsy.

Gaillard's case appears to be of this type, and one of de Amicis's cases was very like it, with enlarged glands, liver, and spleen, but no leucæmia. In Riehl's case and one reported

* *Annales de Derm.*, vol. ix. (1899), p. 236.

by Hallopeau and Laffite there was infiltration, but no tumour formation. In the latter case, the infiltration was confined to the middle of the face.

Kreibich has published yet another form of leucæmia tumour from a case in Kaposi's clinic* in which the tumours reached a large size up to an apple, affecting the forehead, cheeks, chin, ears, and upper limbs, and subsequently, some tumours as large as the fist were felt in the abdomen, the leucocytes were one to twenty-eight red, and the other symptoms of leucæmia were present. The patient was a woman, æt. sixty-three, and the first tumours began as a red spot on the cheeks and took six months to develop into a tumour, but others had a more rapid course. The surface was smooth reddish-violet, thinned, and could not be pinched up. Mayer's case in a man, æt. sixty-eight, was of similar type. These, Oertel's, and Nékám's cases belong to what is called myelogenic leucæmia.

It will thus be seen that in association with leucæmia there may be, (1) small nodules in the skin and subcutaneous tissue; (2) large tumours; and (3) a diffuse lymphatic thickening and hypertrophy of the integument with enormously exaggerated folds producing leontiasis on the face, and followed sooner or later by the development of deep-seated convex tumours, the last corresponding to type III. of mycosis fungoides. Leucocythæmia is generally a late manifestation.

Cases of diffuse thickening without tumours are probably of the same kind, only the case has not lived or been observed long enough for the supervention of the final tumour stage. Both these last forms are associated with some form of dermatitis, while in the others, the surface of the skin even over the tumour is little, if at all, disturbed.

In some cases, the tumours have followed the leucæmia, and in others preceded it; and with regard to the latter it may be a question whether the leucæmia is not a consequence rather than a cause of the tumour formation. Thus in Palma's case in which sarcoma of the thymus was found post-mortem, in life, the white corpuscles rose from one in four hundred and fifty-five to one in seventy-three within a month.

In nearly all the cases, the tumours seem to commence as

* *Archiv f. Derm. u. Syph.*, vol. xix. (1899), p. 185, with coloured plates and references; and plate clxxxvii., Kaposi's Hand Atlas.

infiltrations between the cutis and subcutaneous layers, and encroach upon both.

According to Pincus,* the histological symptoms of leucæmia skin tumours consist in a heaping up of lymphocytes in the corium and subcutaneous lesions which grow in the tumours themselves from the traces of lymphatic tissues normally present (?), and they do not arise from the exudation of leucocytes from the blood current. There are also tumours of lymphatic granulation tissue. There is a possibility that the accumulation of lymphocytes may be due to diminished destruction, instead of increase of lymphocytes in the body.

Oertel and Nékám say that the growths in both leucæmia and pseudo-leucæmia are formed from emigrant leucocytes, while the growths of lymphoma are metastatic.

No special treatment for the tumours would be required, the general condition claiming all the attention.

Chloroma. Green tumour is another form of neoplasm associated with lymphatic leucæmia. In addition to the usual changes in the blood, bone marrow, lymphatic glands, spleen, and other organs, there are lymphoid deposits in the temporal fossæ and periosteum of the bones of the skull and their external and internal coverings. Further, there are green discolorations of the skin diffuse and in tumours which arise in the periosteum and spread by metastasis. Both Dunlop and Byrom Bramwell regard them as lympho-sarcomata, but the cause of the green colour is unknown, but, as Dunlop has shown, it quickly disappears on exposure to air and in fluids which do not dissolve fat, thus negating the theory of the green particles being fatty bodies. There are only twenty-five indisputable cases known, but Bramwell thinks there are similar cases without the green colour which would enlarge the number considerably.

Pseudo-Leucæmia Cutis of German authors represents the skin changes observed in a few cases of Hodgkin's disease, and is what we should call lymphadenoma cutis. According to Joseph, who has had two cases, in one form, nodules both cutaneous and subcutaneous were distributed in large numbers on the neck and

* "Changes in the Skin in Leucæmia and Pseudo-Leucæmia," F. Pincus, *Archiv f. Derm. u. Syph.*, Band L. (1899), pp. 37 and 177, photographic plates.

chest; they vary from a pea to a nut in size, project above the surface, but the epidermis over them is normal. They are movable, painful, and hard to the touch, and structurally consist of large and small round cells with bright nuclei and nucleoli; there are some fusiform elements and giant cells. Lymphorrhœa and death ensued shortly after removing some of the enlarged glands and skin tumours. These nodules resembled those of the first type described under leucæmia. In the other form of which Arning,* Bowen, and Wagner, as well as Joseph, have each had examples, in addition to the tumours there were also intensely itching prurigo-like papules, and the general and skin symptoms were much ameliorated by arsenic. These papules † may also occur without the tumours. In neither form, was there any increase in the white corpuscles of the blood, and the usual symptoms of Hodgkin's disease with enlarged glands and spleen were well marked. Gillot, Landouzy, and de Amicis have had similar cases.

Arning has had another case which he refers to pseudo-leucæmia, a girl, æt. fourteen, who was sent to him for what was supposed to be lupus of the nose, but it had a waxy transparent look, was firm and painless, had never ulcerated, and there were no lupus nodules.

She had also nodules on the mucosa of the lower lip, and hard palate; and others in the skin of the face, neck, and upper extremities of varying size and consistency. No enlargement of glands or blood changes, but an immense spleen. Hypodermic injections of arsenic diminished the spleen to one-half, and the tumours also became smaller, some disappearing completely. There were no prurigo-like papules, as in the previous cases.

Other skin changes observed besides the prurigo papules are lichen papules (v. Recklinghausen); pityriasis rubra (Peter); desquamation in large lamellæ with the skin pale yellowish (Wassermann). The last author also in the same case, found the skin in certain points, especially on the face and legs, strongly retracted, atrophied, and shining, very adherent to the subjacent tissues, and feeling like parchment; also some lineæ atrophicæ. I have also had a case in which severe pruritus in the legs and feet was one of the early symptoms, when there

* Abs. *Brit. Jour. Derm.*, vol. iv. (1892), p. 295.

† Bowen says they have the same structure as true prurigo papules

were only a few cervical glands enlarged, and as there was a strong family history of phthisis they were diagnosed as tuberculous. Subsequently all the symptoms of Hodgkin developed and pea-sized pruritic nodules appeared. Hallopeau and Laffite have also noted pruritus without other skin lesions.

According to Pincus (*loc. cit.*), the tumour-like formations occurring in lymphatic leucæmia are not to be distinguished from those of pseudo-leucæmia. The skin localisations are clinically and histologically identical, the general affections also cannot be distinguished by constant clinical differences in the blood; while qualitative blood conditions and all the other symptoms and the pathological anatomy are identical. Therefore these cases form one group to be contrasted with myelogenic leucæmia, *i.e.*, cases in which myelocytes can be found in the blood. Wende's * case rather supports this, but he regards it as an instance of conversion of Hodgkin's disease into leucæmia. A man, *æt.* twenty-six, was first seen on April 26th, 1900, who stated that on December 1st, 1899, he first noticed a slight induration on the left temple which by April was an oval dusky protuberance 10 cm. across and non-adherent. There was also a deep-seated induration in the centre of the left cheek. There was marked enlargement of glands, but very slight blood changes.

In the left infra-mammary region were two lumps the size of a filbert, and round the nipple there was a large patch like that on the temple, while in the abdominal wall, were seven deep-seated nodules from a pea to a hickory nut in size, the largest of which was cyanotic and brown. Chocolate-coloured blotches mottled the whole chest and back, and all the superficial cervical glands were enlarged, especially on the left side.

Temporary improvement was produced by the injection of Fowler's solution, so that all lesions except the staining had disappeared in six weeks.

On July 1st a tumour appeared suddenly on the scalp, followed by two on the back. A few days later extensive purpura supervened, and there was enlarged spleen, leucæmia 34,000 to the cubic millimetre, swelling of mucous membranes and death on July 30th. The cutaneous lesions consisted of lymphoid cells going down to the subcutaneous tissue.

* *Amer. Jour. of Med. Sciences*, December, 1901. *Abs. Lancet*, March 15th, 1902, p. 752.

Unna * describes these tumours as "a form of granuloma closely resembling lupus and the tuberculous syphilides." Graham Little † agrees with this, and the examination of some small yellowish growths, of which there were hundreds, showed deep-cell infiltration most abundant in the middle zones of the cutis, and especially affecting, as also noted by Arning, the sweat coils. The cells were what he calls "daughter plasma-cells." Mast cells also were abundant, but there were no giant cells.

Pincus wishes to separate mycosis erythrodermia from mycosis fungoides and join it with Kaposi's lymphoderma perniciosum into a special group with the symptoms of I. erythrodermia; II. Diffuse thickening of the skin as seen in leontiasis of the face; and III. by co-existing leucocythæmia, which is usually a late symptom, but I do not agree with this view.

Treatment.—Arsenic injections offer the only chance of amelioration, and Touton and Zeisler have had cures from this method. The formula given by Johnston is 7 cgm. of cacodylate of sodium, 2 cgm. sodium arsenite, water, and Fowler's solution, of each 5 drops, increased gradually to toleration. Such doses would only be justifiable in desperate cases.

MYCOSIS FUNGOIDES.‡

Deriv.—μύκης, a fungus.

Synonyms—Granuloma fungoides (Auspitz, Payne, and others); Eczema hypertrophicum or tuberosum (Wilson); Inflammatory fungoid neoplasm (Geber and Duhring); Fibroma fungoides (Tilbury Fox); Ulcerative scrofuloderma (Van Harlingen); Lymphadénie cutanée; Lymphoderma perniciosum (Kaposi); Sarcomatosis generalis (Kaposi); Multiple sarcoma of skin (Nevins Hyde); Multiple fungoid papillomatous tumours (Köbner); Lichen hypertrophique (Hardy).

* *Histopathology*, p. 621.

† *Brit. Jour. Derm.*, vol xiv., June, 1902, p. 217.

‡ *Literature.*—Author's Atlas, plate lxxviii. St. Louis Atlas, plates xiv. and xvi. Vidal and Brocq, "Mycosis fongoïde," *La France Médicale*, Nos. 79 to 85, tome ii., 1885, gives a full account, with bibliography to date. Auspitz, "Granuloma Fungoides," *Viertelj. f. Derm. u. Syph*, vol. xii. (1885), p. 123, with coloured plates, and Hochsinger u. Schiff. in vol. xiii. (1886), pp. 361, 389. Payne, "Granuloma Fungoides," *Path. Trans.*, vol. xxxvii. (1886), p. 22, with coloured plates and partial bibliography.

Alibert, in his great work of 1814, first described and figured in plate xxxvi. a case of this disease in a Parisian, under the name of "pian fungoïde," which he regarded as allied to yaws, and identical with Amboyna button, or pian of the Moluccas; in his 1832 8vo and 4to editions, he changed the name to mycosis, referring to its external resemblance to a mushroom, and not to a theory of its pathology. Bazin in 1862 was the first to give a clear account of the disease.

That Alibert was not far wrong as to its clinical resemblance to yaws is shown by the fact that so great an authority on yaws as Gavin Milroy* relates a case, which is clearly the disease under consideration, as an example of yaws in a man who had never resided out of England. Subsequent French writers, especially Bazin, Hardy, Besnier, Vidal, Brocq, and Hallopeau, have made our clinical knowledge of the disease pretty complete. Isolated cases have, from time to time, been reported under various names, of which some are given above. English, German, and American authors now acknowledge their identity with Alibert's disease. In England, of late years, many cases have been shown at the Dermatological Society.

The cases may be divided into three distinct classes or types.

In **type I.**, which is the most common, there is some form of dermatitis antecedent to the development of tumours, the premycotic stage of French authors.

In **type II.** the course is marked by recurrent attacks of Tilden, "Mycosis Fungoides," *Boston Med. and Surg. Jour.*, October 22nd, 1885, p. 386—a good account and full bibliography. Funk, *loc. cit.*, see Sarcoma. Ledermann, two cases, *Archiv f. Derm. u. Syph.*, vol. xxi. (1889), p. 683, gives full bibliography. Stelwagon and J. L. Hatch, *A Study of Mycosis Fungoides*, with a report of two cases; the histology and bacteriology were thoroughly gone into, and the bibliography from 1885 given, but Hallopeau's case, alluded to, turned out to be general lupus erythematosus. Besnier, "A Contribution to the Clinical History of Mycosis Fungoides, especially of the Pre-mycotic Period," with two new cases, *Jour. des Maladies Cutanées*, vol. iv. (1892); and *Ann. de Derm. et de Syph.*, vol. iii. (1892), pp. 242 and 987, with Hallopeau. Hallopeau has published several cases with interesting features in the *Ann. de Derm. et de Syph.*, vol. iv. (1893), to vol. ix. (1898), and Besnier and Hallopeau read a paper on Erythrodermia prémycosique at the Vienna Dermatological Congress, 1893, when there was also a discussion on the lymphangitis form. "Mycosis Fungoides," a monograph by Max Wolters: *Biblioth. Med. Abth. D.¹¹ Derm. u. Syph.*, 1899, with bibliography and plates.

* *Med. Times and Gazette*, February 17th, 1877, p. 169.

lymphangitis leading to an elephantiasic form of thickening of the skin with tumour development for the final stage. This is the rarest form.

In **type III.** the tumours develop without antecedent dermatitis, the "tumeurs d'emblée" of French authors, and the course is shortened.

All forms are fatal, but the premycotic stage of type I. may last for many years.

Mycotic fungoides is fortunately a rare disease, but thirteen cases of it have occurred in my private and public practice in the last few years, and I have seen many others at the societies and elsewhere. Seven of my cases were of type I., one of type II., and five of type III.

In type I. the antecedent dermatitis is of the most variable description, but whether all cases are mycosis fungoides from the first, and what appears to be an ordinary dermatitis is only simulated, is a disputed point. At all events, some cases are recognisable as mycosis fungoides from the first, whilst others are not so until the tumour stage is reached. Probably the most common form of eruption is of an erythematous character, the "erythrodermia" of Besnier; in it, there are erythematous discs slightly raised at the border and firm to the touch, or there may be red urticaria-like lesions, which Kaposi says do not itch, but this is not true for all cases. These extend into diffuse infiltrations and assume a brownish tint, and when on the face closely simulate lepra, as in a case shown to me by Stephen Mackenzie. Duhring's case began with acute urticaria, then developed a universal vesicular eruption which lasted a week, severe pruritus followed and in six weeks from the onset the first tumour appeared. Almost equally common is the development of a moist or dry eczema;* the case of fig. 2 of my Atlas which was under Colcott Fox's care was described by him as like "inveterate scaly eczema," while Lukasiewicz described his case as an "eczema rubrum madidans."

In one of my cases, when I saw him shortly before the development of the tumours the eruption appeared absolutely indistinguishable from pityriasis rubra, and it had been so for

* At a discussion at the Amer. Derm. Assoc. many disputed the eruption being really like eczema, but so many good observers from Hebra downwards have so described it that it must be true for some cases.

three years; he had been subject to psoriasis for twenty years and for the last eight years without intermission. Orange red plaques, which gradually increased in number, size, and later on in thickness, marked the onset of another case which was fatal in six years.

In two of my cases, both ladies, there was an eruption which at first sight was psoriasiform, but which was really a distinctive eruption. This form occurs in flat, well-defined discs of a pale red colour covered with fine scales, rather scanty on the central part, but more marked and slightly crusted on the well-defined border.

These discs coalesce and enclose oases of healthy skin, looking depressed in contrast with the prominent border of the diseased surface, recalling, except for the scaliness, the appearance often seen in the early stage of nodulated leprosy. Subsequently in this, as in the other form of premycotic dermatitis, the affected part becomes thickened and infiltrated and from this tumours form. Hallopeau and Bureau describe a case with this form of eruption; and Hallopeau and Jeanselme also had a case in which the first eruption was scarlatiniform followed by large flaky desquamation. All forms of premycotic dermatitis are attended with pricking, burning, and itching, usually severe, sometimes moderate, but rarely absent.

I have, however, met with three cases all remarkably alike in which there was no itching or any other subjective symptom. One was a man of thirty, in whom the eruption had been present for ten years, and while fresh lesions appeared from time to time, none had gone away in spite of the most varied treatment. The eruption was general, but on the trunk, the lesions were thickly placed in horizontal, elongated, faintly rough patches, one to three inches long, as if streaked with the finger; pale red almost yellowish in tint, rather well defined, though the edges were not sharp, and there was slight thickening. The patient was a healthy man and no etiological factor was ascertainable.

In a second case, a man of thirty-seven, the eruption had been present five years, and was limited to the limbs.

In a third, a lady of forty-seven, the eruption had been present nearly ten years. It began as a single patch on the arm, and spread all over the body from that. The patches were ill-defined and pale red with slight powdery roughness, and some were

decidedly thickened. They died down to some extent in the summer and recrudesced in the winter, when it smarted but never itched.

Sometimes the erythematous lesions continue to develop after the tumour stage is reached, and I saw a case in which tumours on the face appeared first and soon after erythematous discs formed on the upper limbs.

This pre-mycotic period may last for months or years, the disease remaining quite superficial; then it gets deep, involves the whole thickness of the skin, which becomes infiltrated and stiff, from a sort of hard œdema like that of leprosy; but the redness *pari passu* increases, and the papillary body thickens into papules or plaques, forming the lichenoid plaques of Bazin. These may disappear rather rapidly, but soon reform on the same or different parts; or they may develop more and more above the surface till they constitute true tumours, and bullæ sometimes develop on and round the extending infiltrations; occasionally, the tumours form on the healthy skin as well, and in one of Stelwagon's cases, the tumours developed almost simultaneously with the erythema, an eruption, which appeared to be erysipelas, being the immediate antecedent where the tumours were about to appear.

The tumours which mark the third stage of the malady may commence in or involve any part of the body surface including the mucous membranes, especially the uvula and palate, but the larynx (de H. Hall), the pharynx (Besnier), and the bladder (Duhring) have been attacked. The viscera almost always escape even at the end, though a nodule on a kidney was observed by Hallopeau in one case. Crull also found a nodule in one kidney and in the lung. Pye Smith found one adrenal converted into what looked like a round-celled sarcoma.

In one of Kaposi's cases, nodules were found in various viscera; and in one reported by Malherbe and Monnier* a woman of thirty-eight, who died in two years, there were tumours in the lungs, the heart, the kidneys, uterus, both ovaries, and the pancreas. There were also tumours in the breast, but the diagnosis is not indisputable.

The skin tumours are of a bright, deep brownish, or bluish-red, rarely pale or yellowish-white, rather sharply defined, roundish or oval, at first merely convex projections, but soon becoming

* *Jour. Mal. Cut.*, vol. xii. (1900), p. 307, abs.

more elevated and sometimes slightly pedicled, and from a lentil to the fist in size. The large ones, from confluence, are covered with tense, shining epidermis, or they may be scaly or slightly crusted with horny epidermis.

They may disappear in the course of a few days, without ulceration, and leave no trace; but more frequently they ulcerate very gradually, the epidermis falling off, and excavations or abscesses may be formed in them. By this time "the fungoid state" is reached, in which variously-sized, fungating tumours are developed.

A characteristic formation is that of a round horseshoe-shaped or crescentic ulcer with a raised rolled border a quarter of an inch wide in a big one, forming a collar from which the central fungating mass projects sometimes bright red, but more frequently with a sloughy covering. Even at this stage, the tumour sometimes sloughs out and heals up, but more frequently extension takes place, the collar and central portion enlarging *pari passu*. There is always more or less sloughing in some of the tumours, but in a case of Hallopeau's massive gangrene of the scalp occurred exposing the skull.

In the tumour stage, sensibility is diminished, and pain, itching, and smarting have disappeared almost entirely in many cases, but sometimes the itching persists. The lymphatic glands generally may be enlarged. In hairy parts, the hair falls off over the tumours and eruptions, which may be seen simultaneously on the same patient. The general health is but little changed, but after a variable time cachexia sets in, with rapid emaciation, and often obstinate diarrhœa or pulmonary complications usher in the end. According to Sabouraud and Leredde, death is nearly always due to streptococcal infection. In one of my cases,* there was a board-like infiltration extending over one side of the neck, which at the autopsy, Pernet found to be the solid, uniform infiltration without pus, which is characteristic of this form of streptococcal infection.

The total duration varies from six months to five or even fifteen years. Bazin records a case of complete recovery, the tumours having rapidly and permanently disappeared after an attack of erysipelas. Funk regards this case as an example of idiopathic multiple hæmorrhagic sarcoma. In a case which I

* Lovelace, U.C.H.

only saw in the premycotic stage, but in which the diagnosis was made independently by G. H. Fox of New York as well, after the patches had become greatly raised, and a tumour the size of an egg had formed behind the knee, she got well in a month under a course of purgation.

Type II. is well represented in the following case. A doctor, æt. forty-eight, had a kick on the knee, followed by suppuration over the head of the tibia, and in the groin and thigh. Six or seven months from the onset, he had lymphangitis in the groin, which was called erysipelas. A year later, his skin was first attacked, beginning on the chest and gradually extending. In its early stage, the eruption consisted of round millet-seed-sized, red papules seated at the hair follicles and slightly flattened at the



Fig. 61.—A portion of a mycosis fungoides tumour highly magnified.

The cells are imbedded in a delicate fibrous stroma. Obj. $\frac{1}{6}$ P. and L., ocul. 2 in.

top, and there was a minute horny spine in the centre in those on the neck and on the back, and a slight roughness in the rest. At first, they were closely aggregated, and developed into patches later. The papules coalesced and formed a diffuse brick-red erythema, with infiltration of the skin extending all over the trunk, face and neck, and upper part of the limbs. It was attended with great irritation at night, but only on exposure in the daytime. There was a dry, powdery scaliness round the hair on the face, and many of the hairs broke off, and occasionally he had scattered pustular folliculitis. The skin of the brows was thickened and corrugated like that of a leper, but the colour was bright red, and this condition was much increased after an attack of influenza, when the whole skin except the lower segments of the limbs was like that of a boiled lobster, but smoother than it had been.

From time to time localised swellings appeared in various

parts of the body and subsided in from three to six days. Every two or three months, also, he had attacks of lymphangitis, preceded by an intensification of the itching and pain of the following kind. Intense pain under the lower third of the left thigh came on suddenly in the night; after two hours, the pain became less intense, and the lymphatics of the limb became cord-like; the redness and intense tenderness all round the thigh lasted forty-eight hours, and gradually subsided after applying a hot water bag. He had also several attacks of what he called acute weeping eczéma, especially of the head, feet, and face. The attacks of lymphangitis naturally increased the infiltration, which was especially noticeable on the face and ears. About a month before the end, the face was enormously swollen and unrecognizable, the furrows obliterated, all the hair was lost, and the scalp swollen, so that the head and face were like a huge globe, the lobes of the ears were as big as walnuts, and the rest of them much swollen but not mis-shapen. On the scalp, were numerous growths in the shape of convex eminences which had been developing about six weeks, and were deep in the cutis or subcutaneous tissue, and the whole of the upper part of the chest was covered by similar but more distinctly convex tumours, closely aggregated all over, although they had only been noticed for a fortnight. There were similar but less numerous growths in the upper part of the trunk, but none on the rest of the body. All these symptoms increased to within a few days of his death, when some of the swelling subsided, and although the tumours extended to the epigastrium, they remained deep in the cutis, and never broke down.

Kaposi under the title of lymphodermia perniciosa described a similar case in 1885, but there was pallor of the surface, great increase of white and diminution of red blood corpuscles, with enlargement of the spleen and lymphatic glands. (See Leucæmia Cutis.) Hallopeau's "red man" seemed to have commenced like my patient, and a similar swelling of the features occurred in Jamieson's case.

In J. Hutchinson jun.'s* case of hypertrophic swelling of the face, body, and limbs, the skin was in thick folds as if it were too big for its owner, following repeated attacks of erysipelatoid

* *Brit. Jour. Derm.*, vol. vii. (1895), p. 1, illustrated; and Jamieson's, in *Edin. Med. Jour.*, March, 1893 also illustrated.

lymphangitis; all the nails and hair were shed, and the glands enlarged, but there was no leucæmia; no tumours developed before death. Hallopeau had a similar case.

In type III. of my five cases, in one, a man of fine physique, æt. thirty-three, the first symptom was a tumour the size of a walnut, which appeared in the abdominal wall without any antecedent lesions, and rapidly increased to the size of an orange, oozed a green fluid, was poulticed and sloughed out. Soon after this he had red spots half an inch in diameter, which lasted a fortnight; three months later a tumour developed on the hard palate, which later on also sloughed out. From time to time tumours appeared and disappeared, and at one time he shed all his finger-nails and nearly all his hair; and after a severe attack of pneumonia with high temperature all the tumours went, leaving only a few healing ulcers. He was nearly well for some time after this, but never quite free from sores; subsequently tumours re-developed, he had epileptiform convulsions, symptoms of thrombosis in the cerebral vessels, and he died three and a half years from the onset.

Most of the *tumeurs d'emblée* type run a much shorter course than this, as in my second case. A man, æt. sixty-five, first noticed finger-tip red spots on his forehead three months before I saw him; they got larger, more prominently convex, a deep dusky red, and a slight scaly crust formed on some of them, due to plugs in the sebaceous orifices, the rest were smooth. One on the right temple developed more rapidly, and broke down when it was five weeks old, and formed a fungating tumour one and a half inch in diameter, arising out of a projecting red rounded collar or ring about a fifth of an inch thick. Another tumour on the thigh was as large as a hen's egg, and had not ulcerated; it was excised, and, as usual, did not return.

There were numerous other tumours or infiltrated patches over the trunk and face in various stages, and the fungating tumours continued to develop as a whole, although many of the growths in the pre-ulcerative stage involuted under treatment. The right temple tumour became a fungating growth several inches in diameter, with sloughing centre, and numerous others on the face were broken down, and he died exhausted in five months from the onset. There was no visceral complication.

In a third case, the tumours commenced in the groin and

forehead at the age of thirty-six, and became in six months very numerous on the face and limbs, but very few came on the trunk. They were about three-quarters of an inch in diameter, like half a cherry, were slightly crusted, but not ulcerated. The patient did not wait for the *dénoûment*, but in despair committed suicide. He was a tall, vigorous man, and as there was a history of syphilis, he had had strong anti-syphilitic treatment without effect on the lesions.

In the second case, the mode of development in the neoplasms could be traced in different stages on the body.

The first lesions were papules closely aggregated into small patches; the papules were pale red, pin's-point to pin's-head-sized, with a central horny punctum; here and there, there was partial coalescence, and the larger papules had two or three horny puncta. In the next stage, the papules enlarged peripherally, flattened out somewhat, and were semi-coalescent in the central portion, and had acquired a deeper red tint, while still discrete and pale at the periphery.

Next the coalescence became more complete, and at the centre formed an infiltration, in which the components were still indicated by fine lines, and finally the whole patch was a uniform infiltration, but still with shallow sulci dividing it.

The tumours were a further development from these.

According to Hallopeau, the lymphatic glands are not enlarged in the *tumeurs d'emblée* type, and were not markedly so in my cases.

In a case of Dubreuilh's, the first growth appeared in the upper eyelid of a man of forty-four, other tumours followed on the face and axillæ, and three months from the onset urticarial patches appeared with itching, and from that time formed part of the disease.

Etiology.—Very little is known under this head. Tilden's, Hyde and Montgomery's, and my own analyses show that two-thirds of the cases are of the male sex. Three-quarters of the patients are over thirty years old, from forty to fifty and fifty to sixty being the most common decades, the extremes being fifteen (Gastou and Sabareanu) and seventy-three years (Hallopeau). I have met with one which began at eighteen. No two instances have occurred in the same family, and, unlike yaws, it is not contagious.

Pernet has noted that a large number of the patients come of a long-lived family, and they are generally in good health when attacked and for a long time afterwards. Although many of the cases with dermatitis antecedent to the tumours are undoubtedly mycosis fungoides from the onset, the evidence is in favour of the disease developing in some instances on an ordinary dermatitis. One of my cases was certainly subject to ordinary psoriasis for many years, and was indistinguishable from ordinary exfoliating dermatitis for three years before the onset of the tumours, and there are many similar instances; but Besnier and other high authorities think they are all mycosis fungoides from the very first, and that microscopic examination would prove it. Besnier also thinks that the tumours never start from quite healthy skin, but in one of my cases they certainly did so.

Pathology.—The preponderance of opinion, and the fact that partial improvement may be obtained in some cases by arsenic and salicin, suggest that the morbid phenomena are the result of bacterial action, either directly or through their toxin, although the organism has not yet been identified. The growths therefore belong to granuloma, and not to sarcoma, lymphosarcoma, or lymphadenoma, as some of the earlier writers have suggested. Anatomically, the tumours consist of round cells supported by a scanty delicate reticulum, which replace the normal tissue of the cutis, the boundary between the healthy and diseased tissues being ill-defined.

Anatomy.—The histology has been investigated by a host of observers, but only those made by modern methods will be considered. Of these Unna, Leredde, Hyde and Montgomery, Galloway and Macleod,* appear to me of most value. They all advocate the diagnostic importance of biopsy in an early stage.

Leredde has examined in the premycotic stage apparently healthy skin and erythematous plaques, and has found changes in the shape of proliferation of fixed cells round the vessels; mast-cells; perivascular foci, consisting of a reticulum including fixed and lymphocyte cells; the foci form in the sub-papillary layer and invade the papillæ at a later stage; there are vascular changes with a special type of giant cells.

Unna lays great stress on the multiformity of the cells, which is confirmed by others. He examined a case of the seborrhœic eczemaform type in

* Unna, *Histopathology*, p. 509. Leredde, *Annales de Derm. et de Syph.*, 1894, p. 509. Hyde and Montgomery, *Trans. Amer. Derm. Assoc.*, 1898, p. 42; a good review of previous observations and references. Galloway and Macleod, *Brit. Jour. Derm.*, vol. xi. (1900), May and June.

which, therefore, the epidermic changes were conspicuous. He regards it as a mixed infection with seborrhœic catarrh, but this view is not generally accepted.

Hyde and Montgomery regard the disease as *sui generis* from the earliest pruritic symptoms, differing from infectious granulomata, in that its manifestations are limited to the skin with a few doubtful exceptions.

Vollmer thinks that in addition to the connective tissue cell changes those in the epithelium, œdema of stratum granulosum, etc., are also characteristic.

Galloway and Macleod, from the examination of three cases, find the following:—

A. In the premycotic stage. 1. A connective tissue cell proliferation around the blood vessels of the whole corium and the structures in it, commencing in the sub-papillary layer. In the early stage, the infiltration is on the upper part of the corium only. 2. These cells are of five types—(a) Large, oval, fusiform, or roundish, with a large nucleus, with mitotic figures in the early, but amitotic in the late stage; (b) Small round cells a little larger than leucocytes, with nuclei like *a*; they were the products of the rapid amitotic division of *a*; (c) Mast cells, but not in increased numbers, and varying in size from *a* to *b*; (d) A few plasma cells of the larger variety; (e) Imperfect giant cells, with eight to ten nuclei, were sometimes seen. It is evident that *a* and *b* are numerically the most important elements. The epidermic changes were secondary, and showed active mitosis of the prickle cells and downgrowth of the interpapillary spaces.

B. In the tumour and breaking-down stage, there was increased cell proliferation, with tendency to break down very marked in the fungating stage, while the granuloma encroached on the epidermis, flattening and destroying up to the stratum corneum.

Bacteriological investigation yielded no practical result, and they could not find McVail's* "short white bacillus." They differentiate microscopically other granulomata as follows:—

In *sypilis*, the cell proliferation is less multiform, plasma cells are more numerous, the vessels more dilated, and the cell proliferation round them is at its maximum and the collagen is increased.

In *mycosis*, multiformity in the cells is characteristic, plasma cells are rare cell proliferation round the vessels moderate. In the later stage, the crenation and fragmentation of the cells is a distinguishing feature.

In *tuberculosis*, the granuloma is almost made up of plasma and its daughter cells. There are giant cells with central caseous degeneration which are never present in mycosis. The collagen bundles disappear in an early, while in mycosis, they only go in a late stage.

In *round-celled sarcoma*, the mesoblastic cells are uniform in size and shape. The deeper layers of the cutis are first affected, and the epidermis not at all unless the sarcoma breaks down. In the spindle-celled form also the cells are more uniform and rarely show karyokinetic figures.

In *leucæmia cutis*, the infiltration is purely leucocytic, there is no fixed cell proliferation, mitosis, or imperfect giant cell formation.

Diagnosis.—At the beginning, when apparently simple eruptions

* Abs. McVail and W. D. Murray's case in *Brit. Jour. Derm.*, vol. x. (1899), p. 169. The bacteriology appears to have been carefully done.

precede the formation of the tumours, the diagnosis may be very difficult, even Hebra having once diagnosed a case as eczema, and it may also be mistaken for erythema exsudativum, psoriasis, pityriasis rubra, some form of lichen, or even nodulated leprosy.

The irregularity of distribution, the sharply defined border, and the greater thickening, which is more than in erythema, eczema, or psoriasis, might excite suspicion.

The oases of healthy skin appearing depressed by contrast with the raised diseased areas enclosing them are very suggestive.

There is generally not so much discharge as in *eczema*, with the same amount of hyperæmia; not the heaping of silvery scales, of *psoriasis*; neither is it in the psoriasis positions; while it is too chronic, for *erythema exsudativum*, when it is smooth, and very often there is too much scaliness.

The cases which imitate pityriasis rubra may be indistinguishable, except histologically, until thickening of the tissues occurs. The licheniform cases do not exactly imitate the recognised forms of lichen; even when the papules are flat, they are not angular, and of the colour of lichen planus.

In the leprosy-like cases, the resemblance is limited to the face, and there would not be the leprosy nodules, the general or nerve symptoms, and the leprosy bacilli, and in many cases, the patient would not have been in a leprosy district; and although on the body, similar oases of healthy skin are often seen in the early stage of leprosy, the surrounding leprotic infiltration is not scaly, but a dull red or brownish erythema quite unlike that of mycosis fungoides.

The itching, too, is generally more severe than it would be in all but eczema, and enlargement of the lymphatic glands is general and pronounced without leucæmia. Finally, Besnier says, "In all cases of ambiguous pruritic dermatoses which are prolonged and rebellious to ordinary methods of treatment, the possibility of the disease being the premycotic period of mycosis fungoides should be borne in mind."

In doubtful cases, wherever possible, a piece of skin should be excised and examined microscopically.

The lymphangitic cases, which soon develop into general redness and thickening of the tissues, *l'homme rouge* of French authors, are very distinctive, even before the enormous hypertrophy occurs which brings the skin in thick folds.

The tumour development is often a late feature, and there may never be fungation, as the tumours are more deeply seated as a rule. The enlarged spleen and glands, and the blood changes are confirmatory.

When the fungating tumour stage is reached, there can be no difficulty. In the more localised forms, where there is no preceding eruption, it may be mistaken for *sarcoma* or *carcinoma cutis*; the absence of early implication of the lymphatic glands, although tumours in the groin may simulate them, and the comparative painlessness, would perhaps be a help to a right conclusion, while, as a rule, the course would be slower, and the internal organs would never be implicated.

It would help if proof could be obtained in sarcoma that it started from a deeper structure. Further, it is rare for sarcomata to disappear spontaneously, while it is a common feature of mycosis fungoides.

Prognosis.—With the exception of Bazin's and Geber's cases, and one of my own, the result has invariably been fatal, the extremes being nine weeks (Gaillard) and twenty years, the widespread cases, which commence as apparently simple inflammations, being much less malignant in their course than the cases which begin at once as tumours. With this exception, we have no data to guide us as to the course the disease will take.

Treatment.—Nothing has, unfortunately, appeared to exert any influence in stopping the course of the disease, and we are so completely at sea as to its true etiology and pathology, that the therapeutics must be entirely empirical.

Arsenic has of course been tried most extensively. Stelwagon tried arsenic internally and by subcutaneous injection most thoroughly in one case, but with no good result; nevertheless it has been of some benefit in other cases, delaying the course of the disease apparently, and many of the lesions, even in the tumour stage, involuting. Salicin in my hands has done even better in producing involution of the tumours in the pre-ulcerative stage; and in one case, thyroid extract had a similar effect. When, however, ulceration or fungation has set in, none of these drugs are of any use. In one case in my cognisance, cacodylate of soda was tried, but had less good effect than injections of Fowler's solution.

In one of my cases, all the non-ulcerating tumours cleared up under salicin, while the ulcerating tumours proceeded unchecked

and killed the patient by septic absorption, in spite of iodoform and other local antiseptics. I tried injections round the tumours, in one case, of both carbolic acid and perchloride of mercury, and also thiosinamin; and Mannino tried resorcin injections, but without any success. Anything that produces a high temperature has a good effect. Thus one of my patients was almost cured, and of course almost killed, by an attack of double pneumonia. Another improved very much during a malarial febrile attack, and, as before mentioned, erysipelas has quite cured one case, and a controllable erysipelas serum would be worth trying in such a desperate disease, although Besnier tried streptococcus serum, and Gilchrist Coley's fluid unsuccessfully, and I know of another unsuccessful case.

The other case in my own cognisance which got well was due, as far as I could ascertain, to continued purgation given by a doctor who did not recognise the disease, but wished to purify the blood. These facts all point to the existence of a toxin as the pathogenic factor, and make one hopeful that a successful treatment may be discovered.

According to Vidal and O. Simon, pyrogallie acid in the form of 10 to 20 per cent. ointment is of service as a local application. Besnier recommends camphorated naphthol in the same way, guarding the surrounding skin, and watching the urine so as to stop as soon as there are signs of absorption, as both the drugs are dangerous to life if absorbed in large quantity. Besnier has also given camphorated naphthol in drop doses in a capsule by the mouth, and Brocq has injected it into the tumours with some improvement. Norman Walker relates a case of Allan Jamieson's in which local improvement ensued after exposure to the Röntgen rays; and Brooke has had a similar experience in a youth with multiple nut-sized tumours, but the diagnosis was not conclusive in the latter case.

YAWS.*

Deriv.—From Carib, *yáya*, the meaning of which is doubtful.

Synonyms.—Framboesia (*Fr.*, Framboise, a raspberry); Pian; *Ger.*, Beerschwamm; Paranghi (Ceylon); Amboyna button; Coco (Fiji) etc. Tonga (New Caledonia).

* *Literature.*—Government Report on Yaws in West Indies by A. Nicholls,

Definition.—An endemic specific and contagious disease, characterised by raspberry-like nodules, with or without constitutional disturbance.

Yaws is a disease confined to tropical climates. It is found chiefly on the west coast of Africa for about 10° each side of the equator; also on the east coast and in the central regions, rarely in the north; in Madagascar and the Mozambique extensively; in Ceylon; in Hindustan (Pondicherry and Assam); in some of the islands of the East Indies; in the Oceania groups, and in the West Indies, especially Dominica and Jamaica; and in Tropical South America, especially Brazil, Central America, and Mexico. It is probable that the button scurvy of Ireland, now extinct, but described by various writers from 1823 to 1857 as a contagious disease which was prevalent in the south and interior of the island, was closely allied to yaws, if not identical with it.

The first mention of the yaws disease is by Oviedo (1535), who met with it in St. Domingo; but it is to Sauvages at the end of the eighteenth century, and to writers of the last thirty years, such as Gavin Milroy, Imray, Nicholls, and Bowerbank in the West Indies, Kynsey of Ceylon, MacGregor of Fiji, Numa Rat of the Leeward Islands, Charlouis and French colonial surgeons, that we owe our present knowledge of it.

Numa Rat, from whom the following account is chiefly taken, with coloured illustrations (Eyre and Spottiswood, 1894.) In *New Sydenham Society* vol. for 1897, of selected essays, there is an epitome of this Report by Wallbridge and Daniels, with critical observations; "The West Indian and Fijian Disease"; a translation of Charlouis's valuable paper of 1881, on Yaws in Java; also of Breda's paper on Boubas in Brazil, with a different symptomology to the rest, as they were all cases of long standing. *Yaws*, by J. Numa Rat, with preface by J. Hutchinson (London: Waterlow, 1891), with bibliography to 1887. Gavin Milroy, Report on Leprosy and Yaws in the West Indies in 1873; also in *Med. Times and Gaz.*, November, 1876, and February, 1877; also January, 1880, an article by Nicholls, and, in April, 1880, an article by Bowerbank. In *Brit. Med. Jour.*, vol. ii. (1881), p. 712, is a good article on Parangi, abstracted from Kynsey's Report to the Government of Ceylon: the Report itself, with an excellent series of original drawings, is in the library of the College of Physicians. Hirsch's *Handbook of Geographical and Historical Pathology*, Syd. Soc. ed., vol. ii., p. 110, contains a good account of yaws and button scurvy, with bibliography. Manson's "Tropical Diseases," 2nd ed. (1900), p. 455. His description is taken chiefly from Nicholls's, and differs in some points from the one here given. Jeanselme, *Pian* (as observed in French Indo-China), (*La Prat. Derm.*, vol. iii., 1902). Also recent issue illustrated, *N. Syden. Soc. Atlas*, 1902.

like Kynsey did formerly, divides the disease into four stages—incubation, primary, secondary, and tertiary; now, however, Kynsey considers that it should be, incubative, febrile, and eruptive, and that if there are sequelæ they are accidental.

The incubation stage is taken from the date of infection to the first appearance of the local lesion at the site of inoculation, and varies from three to ten weeks,* the former being the usual period. There is some dryness and branny desquamation of the skin, especially round the lesion, which may recur or persist into the later stages; beyond this, there are usually only vague symptoms, perhaps palpitation, vertigo, and œdema of the limbs and eyelids. The primary stage is that of the initial lesion, and consists of a pin's head papule, which at the end of seven days has a yellow cap; in another week, the fluid dries into a scab, beneath which is an ulcer with perpendicular edges and clean base. This heals in a fortnight under treatment, leaving only a superficial scar, or it may take two months without treatment. Less commonly, the papule may slough out, leaving a clean ulcer the size of a florin, or it may be a non-ulcerating nodule, which becomes absorbed with desquamation over it, or it may be deep-seated, and ultimately discharge through several minute openings. Finally, the local lesion may be, if not missed altogether, unobserved. The initial lesion is most frequently found on the lips, areola of the breast, the groin, genitals, or perinæum, or on the feet in those who go barefooted.

A. Powell † strenuously disputes the existence of this initial stage, and quotes Prout, Nicholls, Rochas, and Paulet as all agreeing that the initial lesion is exactly like the subsequent lesions, or it may be absent altogether. Some authors lay stress on a single yaw preceding for some time the general outbreak, the "mother yaw" of the natives, who think the rest spring from it. It is said that it often persists throughout the course of the disease, and may even be the last to heal. Nicholls and Daniels, while admitting the existence of a "mother yaw" in some cases, state that it is exceptional, and has no practical importance, as it is like all the rest, though some say it has an indurated base which the later ones have not.

* Experimental inoculation gives a shorter period, viz., twelve to twenty days (Paulet), fourteen (Charlouis).

† "Yaws in India," *Brit. Jour. Derm.*, vol. viii. (1896), p. 457.

The secondary stage usually comes on about a fortnight after the sore has healed, *i.e.*, about a month from the onset. There is intermittent fever, usually of a quotidian type, with headache, backache, and shooting pains in the limbs and intercostal spaces like those of dengue, and with nocturnal exacerbations. The lymphatic glands generally are enlarged, those near the site of inoculation especially. Albuminuria, hæmaturia, and epistaxis may be present. In adults and some children, the general symptoms may be slight. The eruption, which appears with the general symptoms in a typical case, consists of minute red spots like lichen tropicus. It appears first on the face, and develops from above downwards, so that the whole body is covered at the end of three days, but the trunk is least affected as a rule. Many of the spots enlarge to distinct conical papules, but the greater portion fade after the third day. By the seventh day, the apex of the papule is of a pale yellow colour, which Rat considers to be inspissated sebum, and a black skin has the appearance of being dotted over with yellow wax. The papules then develop into nodules of a cylindrical shape, with a dome-shaped thick yellow crust,* the whole, in a typical fully developed lesion, being $\frac{1}{4}$ in. across and $\frac{1}{8}$ in. high. Underneath the crust is a mass of granulation tissue, covered with a creamy acid secretion, and the whole looks like small pieces of pickled cauliflower an inch apart, often with specks of red, due to dried blood from the subjacent papillæ. It is only with the crust off that there is any resemblance to the raspberry, and as anæmia advances the colour fades to yellow, and even white. This full development takes about a fortnight. During the next four weeks, it then shrinks down until the scab is on the skin, but brown and dried up, soon falling off, and leaving a pale macula, which in dark races gets darker than the normal, but in pale races remains paler than the natural skin, and in either case, is scarcely ever obliterated. Intense itching is almost always present, and there is a sour, musty odour, which becomes offensive in severe cases.† More or less intense anæmia is also a constant symptom.

Such is the course of the disease in a healthy infant or child in which the disease runs an acute course, and Rat says seldom

* This yellow cap may adhere closely or be detachable from the presence of pus beneath it (Daniels).

† Powell (*loc. cit.*) says that in coolies who wash daily, fœtor is absent.

recurs, whereas other authors say relapses are very common ; but in adults, it has a tendency to become chronic, and produce the later lesions of the tertiary stage. In unhealthy subjects, the nodules may coalesce into widespreading superficial ulcers, which interfere with the usual course of the disease.

Variations.—The nodules may vary in number and size from a millet seed to a walnut when single, or they may coalesce into a large patch of granulation tissue under a single crust, or they may form rings round the eyes, nose, mouth, or anus, or enclose sound skin (**ringworm yaws**). In the last position, the crusts get rubbed off, and then the lesions resemble the mucous patches of syphilis. In unhealthy subjects, instead of the nodules being absorbed and healed in six weeks, they will go on for nine months or more if untreated, or they may break down into ulcers, which, however, readily heal under treatment. On the palms and soles, the most frequent position in the later stage, the horny covering prevents the protrusion of the nodules, and they are then painful on pressure, *e.g.*, in walking, hence the “crab-like gait,” and a perforating ulcer on the ball of the great toe may ensue. Lesions may also be produced on the nasal mucous membrane, mouth or glans penis, or auditory meatus, and produce great pain, but as a rule the painlessness of yaws is a characteristic feature when fully developed, but Charlot says they are painful when they first appear, and that it is only the later batches which are painless.

Sometimes the nodules abort, leaving a persistent scaliness, with loss of pigment, or follicular pustules may form below the elbow or knee, and persist after the usual nodules have gone. There is no alopecia or other damage to the hair, except on the site of the lesions, where the follicles are destroyed. Onychitis sometimes occurs, with shrivelling and irregularity. Muscular contractures, probably from infiltration, and nodes may appear on the cranium, clavicle, ribs, ulna, tibia, and metatarsal bones during the secondary period. The tertiary period occurs in those who have a special predisposition, constitutional debility, or who have bad hygienic surroundings or have had injudicious treatment. The lesions are no longer limited to the skin, but involve the deep tissues. Then the superficial ulcers get deep and lose their characteristic crusts, and heal with distorting cicatrices, the neck, front of the elbow, wrists, back of the hand, and instep being favourable positions

for them. The duration of the diseases averages two years, but varies between three months and four years.

A serpiginous ulceration may occur several years after the secondary period. Successive rings of nodules, which ulcerate and heal, may form round the ankle, and leave narrow cicatricial concentric rings. Granulation nodules, as in the secondary period, may also be formed, and nodules like syphilitic gummata often break down into ulcers, especially about the ankle or instep, or they may remain unchanged for months, and eventually be absorbed, but are prone to recur unless completely destroyed. Other late manifestations are: destructive ulceration of the nares, pharynx, and soft palate, which are chiefly seen at puberty after yaws in earlier life; diffuse chronic periostitis, as well as the nodular form of the secondary period, may occur with great pain; dactylitis and arthritis may be seen; permanent contractures also are seen at this period; anæmia and marked cachexia are present in severe cases, and death may occur from exhaustion, pyæmia, septicæmia, or intercurrent inflammations, but it is seldom fatal if properly treated, and it is often remarkable that the lesions may be severe, with very little disturbance of the general health.

There is still a good deal of dispute as to the tertiary lesions. Some think they exist but are rare, many do not mention them, and many deny their existence as a consequence of yaws, but ascribe them to concurrent tertiary syphilis. Powell never saw them among coolies.

Etiology.—A tropical climate is an essential factor for the disease, which occurs in both sexes, at any age, but is most common in children from two to twelve years old, while it is rare under twelve months. Among predisposing influences, race comes first, negroes and East Indians being especially liable, but it is said that mulattoes, creoles, and other hybrids are less often attacked, and it is rare in whites. Probably no race is exempt, but the difference in habits determines a greater or less frequency of exposure to inoculation. It is never congenital, and the modern tendency is towards disbelief in its being hereditary.

It is, however, undoubtedly contagious, inoculable through an abrasion or sore, and even, it is said, through sound skin, flies being often the carriers of contagion, though some experiments on parangi are adverse to its being inoculable. Charlouis has shown that failure only occurs when the yaws lesion is in the

declining stage. The disease is protective as a rule, but Nicholls and others have met with instances of second, and even third attacks. Much has been attributed to the bad hygienic conditions in which negroes live, but these have only an indirect influence, aggravating the form of the disease, and facilitating its propagation, but not producing it, as it does not occur under the same conditions everywhere, but is strictly endemic. It is noteworthy that while yaws, or "coko," is common in Fiji, syphilis is unknown among natives (Daniels); Koch observed the same thing in German New Guinea.

Pathology.—It is undoubtedly due to a specific, contagious virus, modified by race and climate, but whether *sui generis* or that of syphilis is a moot point still, Hutchinson and some others holding that it is so, but most who have observed it in its native haunts consider it an independent disease, though it has many analogies to syphilis; and as I read the evidence it is clearly in favour of yaws being a separate disease.* Recently (1894) Nicholls and Watts claim to have found the yaws microbe in the form of a micrococcus which invades the system through the lymphatics. It was always present in the granulomata and the lymphatic system, but not in the blood. The disease has not yet been reproduced from inoculation of a cultivation in the human subject, and animals are probably immune. Should these observations be confirmed and extended the question will be settled. Daniels, Haffkine, and Powell have also found micrococci with whitish cultivation. Breda found bacilli in the tissue itself by soaking the section for twenty-four hours in alum carmine, then for half an hour in water, and then staining by Weigert's fibrin stain; a high power is required to see them.

Anatomy.—The anatomy has been investigated by Charlouis, Pontoppidan,† Paulet, Ferrier, Rat,‡ and others. Charlouis found that the process was at first that of a dermatitis, confined to the papillary layer, gradually extending into the corium, and involving the appendages of the skin. A

* Some powerful arguments against yaws being a frambœsiform syphilis are brought forward by A. Powell, *loc. cit.*, and Daniels, *Brit. Jour. Derm.*, vol. viii. (1896), p. 421. Beaven Rake, vol. iv. (1892), p. 376, found none of the visceral changes of syphilis in four autopsies on yaws patients, but the best differentiation is Sir William Kynsey's *résumé*, *Brit. Med. Jour.*, September 21st, 1901, p. 802. On the other side *vide* Hutchinson, *loc. cit.*, *New Syd. Soc.*

† *Viertelj. f. Derm. u. Syph.*, vol. ix. (1882), p. 201.

‡ McCleod, *Brit. Med. Jour.*, September 21st, 1901, p. 797.

considerable portion of the epidermis was thrown off, the part of the rete still left being infiltrated with leucocytes. The exciting cause of the inflammation could not be discovered. Pontoppidan thought the process began in the rete, and found no changes deeper than the papillary layer.

Unna says: The yaw is more simply constructed than a syphilide. It is a plasmoma of the cutis complicated with epithelial growths and hyperkeratosis. The strawberry appearance after removal of the crust is the result of the great increase of the papillary body, and its thin covering with the supra-papillary prickle layer. The cellular infiltration consists of plasma cells. Macleod's investigations agree with Jeanselme's. They were made on eight cases from Ceylon, and the following *résumé* is in his own words.

An examination of a large number of sections of the different lesions of yaws corroborated Nicholls' observation that the skin manifestations, namely, squames, papules, tubercles, etc., were stages in the evolution of a common histological process.

A. Changes in the Corium.—(a) Vessels: dilatation and tortuosity in the papillary and sub-papillary layers; no thickening of the vessel walls or endothelial proliferation; vessels persist in the granuloma. (b) Cellular infiltration: 1. Plasma cell infiltration at first most marked in the neighbourhood of the vessels, follicles, and glands, rapidly becoming diffused; no definite arrangement in rows; no large multinuclear cells (chorio-plaques), or true giant cells. 2. Mast cells, connective tissue cells, and small mononuclear cells; no tendency to organisation detected. 3. Marked extravasation of polynuclear leucocytes. (c) Fibrous stroma: 1. Collagen attenuated where the granuloma is densest; no definite degenerative changes. 2. Elastin similarly affected. (d) Hair follicles, sebaceous glands, and coil glands seemed healthy.

B. Changes in the Epidermis.—(a) Marked proliferation and down-growth of the interpapillary processes so great in the older lesions as to resemble condyloma acuminatum. (b) Basal layer uninterrupted. (c) Œdema affecting prickle cells and interepithelial spaces. (d) Disappearance of pigment in the affected area. (e) Transitional layers imperfect. (f) Cornification: marked hyperkeratosis and parakeratosis with deposition of leucocytes and débris between the horny lamellæ.

Bacteriology.—A specific microbe was not definitely detected, though cocci, micro-bacilli, and sarcinæ were found in the horny crusts.

DIFFERENTIAL HISTOLOGICAL DIAGNOSIS.

Yaws belongs to the group of the "*Infective Granulomata*." It is distinguished from:—1. Actinomycosis and rhinoscleroma by the absence of their specific micro-organisms. 2. From the lepromata by the absence of Hansen's bacillus. 3. From mycosis fungoides by the absence of "fragmentation" of the infiltrating cells, and of degenerative changes with the formation of products of degeneration in the collagen and elastin; by the presence of the peculiar epidermal changes of yaws. 4. From tuberculosis, apart from the tubercle bacillus, by the absence of the characteristic architecture with its giant cells, daughter plasma cells, more marked disintegration of the fibrous stroma, and complete disappearance of the blood vessels. 5. From syphilis, by the following details which, considered collectively, strongly suggest that yaws and syphilis are different histological entities. (a) Cellular

infiltration: plasma cells not so definitely arranged in rows or clustered round the blood vessels as in syphilis; no large multinuclear cells (chorio-plaques), or true giant cells, or intracellular hyalin degeneration noted in yaws. (*b*) Fibrous stroma: rarefaction of the collagen more marked than in syphilis, but no organisation, or colloidal degeneration (such as occurs in syphilitic gummata) found. (*c*) Blood vessels: no distinct proliferative changes in the vessel walls or endothelium as frequently occurs in syphilis. (*d*) Epidermis: marked proliferation and downgrowth of the epithelium, with a great thickening of the horny layer (due to hyperkeratosis or parakeratosis) are characteristic features of yaws, while they are unusual in syphilis.

Diagnosis.—The most characteristic features are the initial papule, which enlarges to fungating nodules with an acid secretion, and covered by a yellow crust. When this is removed, it leaves bare the raspberry-like tumour, which remains stationary for weeks or months with yellowish discharge, not painful on pressure, and tending to heal spontaneously without scarring, unless irritated into ulceration, or in cachectic conditions; the disease, as a whole, tending to spontaneous recovery, except in bad hygienic conditions. Loos and others have endeavoured to separate the *parangi* of Ceylon from West Indian yaws, but the supposed distinctions break down on close examination, and Sir William Kynsey has no doubt of their identity. The button scurvy of Ireland is also admitted to be a form of yaws. The differences from syphilis, according to Numa Rat, are principally the fungous eruption with acid secretion and the absence of enlarged glands (these, however, are mentioned by some authors). Other differences are, no induration of the initial lesion, which is never phagedænic, and usually extra-genital. The characteristic eruption is not symmetrical or polymorphous, but has constant characters unmodified by age, sex, or race; it is rarely pustular, and does not leave scars unless irritated or injured. The lesions of the mucous membranes are never present until after the secondary stage, generally years after. No alopecia or other hair change, no eye changes such as iritis, no ulcers of tongue, anus, or rectum. Mercury is injurious in the primary and early part of the secondary stage, and iodides are much less efficacious than in syphilis in the tertiary stage. In yaws, the following characteristic symptoms of hereditary syphilis are absent: notched teeth, rhagades round the mouth, mucous patches, enlarged spleen, bullous syphilides of palms and soles, osteophytes and epiphyseal

enlargements, eye and ear lesions. Even these are not the only differences; one very notable feature being that, when yaws is not injudiciously treated, the lesions are limited to the skin, and less frequently to the mucous membranes.

Two cases have been observed by Powell and two by Charlouis, in which persons with yaws have contracted syphilis, with the usual symptoms co-existing with the yaws lesions, which disproves Daniels's statement that co-existent syphilis always precedes yaws. Yaws when inoculated always breeds true. It is probable that in their descriptions, some authors have mixed the symptoms of syphilis and yaws.

Treatment.—Improved hygienic conditions are always most important. The most careful cleanliness, and nutritious but unstimulating diet, tonics, diaphoretics, and, locally, disinfectant applications, carbolic or boric acid lotions, and diluted nitrate of mercury ointment, are recommended by Imray, who also suggests that at first, sulphur and acid tartrate of potash should be given for a week, to bring the eruption out thoroughly, as when it fails to develop well in the early stage, the patient becomes cachectic, and septic symptoms may ensue.

Powell has observed that an attack of malaria or other disease attended with fever has very often a curative effect on the fully developed lesions, but stimulates those in the papular stage, and in 1784 Naubhard noted that small-pox cured yaws.

Rat lays great stress upon healing a previously existing sore, if it is the site of inoculation, as it prevents the development of the eruption. He also recommends iron, preferably the tartrate, and cod-liver oil, and for the febrile condition, quinine or salicylate of soda. He is a strong advocate for diaphoretic measures after the febrile symptoms have subsided, ammonium carbonate being preferred on account of its being alkaline as well as stimulant and diaphoretic; and he lays great stress on promoting alkalinity of the secretions. For the characteristic nodules, he recommends sulphur baths, natural or artificial, and calomel fumigations. After the nodules have dried up, iodide of potassium and tonics should be given for another six weeks. If the lesions are obstinate, Donovan's solution in doses of $\mathfrak{m}\nu$ to $\mathfrak{m}x$ is recommended. In the tertiary stage, Rat still gives mercury and iodide of potassium combined, or the calomel fumigations and full doses (gr. 15) of iodide. He believes that, as in syphilis, mercury alone cures,

iodides only alleviate. All are, however, agreed that it should not be given in the early stage, and that its administration requires care and watchfulness, or it will do more harm than good.

Charlouis obtained the best results by applying ung. hydrarg. to the nodules, and giving iodide internally, but iodide alone only relieved the bone pains, but for these iodoform pills five grains three times a day gave immediate relief.

The various sores are best treated by washing with weak perchloride of mercury lotion, and the application of iodoform, either dry or as an ointment. Black wash is also often useful. In Breda's Brazilian cases of long standing, nothing except erosion had any effect.

VERRUGA PERUANA.*

Deriv.—*Verruga*, Spanish for a wart.

Synonyms.—Peruvian wart ; Carrion's disease ; † Oroya fever.

This disease is mentioned as early as 1543 by Zárate, in his History of Peru, but Tschudi in 1845 gave the first good medical account of it. It is a narrowly endemic disease, with occasional epidemic outbreaks, being confined to the narrow gorges of the Western Andes in Peru ; ‡ and it is not in any way connected with yaws, with which it is usually confounded, the single fact that whites suffer more frequently and severely than negroes or Indians being an important distinction, enough to separate the two diseases. Verruga is certainly inoculable, § and it is highly dangerous to stay in the diseased centres even for a short time,

* *Literature.*—Hirsch, *loc. cit.*, vol. ii., p. 114. Plate xli., Frambœsia, Sydenham Society's Atlas, represents this disease—an account of the case is given p. 145 of the catalogue. Beaumanoir, "De la verruga," *Archives de Méd. Navale Coloniale*, January, 1891, p. 1. A good abstract in *Ann. de Derm. et de Syph.*, vol. ii. (1891), p. 818, also vol. x. (1898), p. 59. Abs. of Chastang's Memoir, *loc. cit.*, 1897, p. 417, *Brit. Jour. Derm.*, vol. x. (1899), p. 59.

† Odriozola ; monograph with plates published in Paris, 1898. Morrow's System, *Gen. Ur. Dis., Derm. and Syph.*, vol. iii., part ii., p. 707, gives a very extensive bibliography to 1891.

‡ In *Lancet*, November 10th, 1883, Dr. de Havilland Hall describes a peculiar disease met with at Zaruma in Ecuador by Mr. Aldridge, which corresponds in many respects with verruga.

§ In the *Lancet*, 1886, is the case of Carrion, a Peruvian medical student,

but this is possibly analogous to the effect of the malarious parasite. It appears to be an acute specific affection, which affects animals, the horse, ass, mule, and dog, as well as man.

Symptoms.—The outbreak of the eruption is preceded for some weeks or even months by severe febrile symptoms, of which a cramp-like contraction of the gullet was said by Dounon to be the most characteristic, but Castillo and others say that it only occurs when there are pharyngeal verrugas.

There are also cramps in other muscles and severe pains with great prostration, and sometimes death before the eruption has time to develop, constituting Oroya fever.*

There is great destruction of red corpuscles, from half to one-third or even less.

Ordinarily these symptoms remit or vanish with the appearance of the eruption, which begins on the face and limbs and spreads over the rest of the body; or the eruption may be delayed until after the spontaneous subsidence of the general symptoms; or again the latter may be reproduced after the eruption is out. The lesions are lentil to pea-sized, raised pink spots, which develop into cylindrical, conical, or hemispherical tumours, from a raspberry to a pigeon's egg, or even an orange in size and in shape, cylindrical, conical, hemispherical, or fungi-form. The consistence is soft or elastic, according to the rate of development, and *the surface is tender*, thus contrasting with the painless lesions of yaws. They are highly vascular and their surface is smooth and shining. Sometimes they develop from vesicles of various size, or from pustules instead of from pink spots. When the tumour is fully formed the epidermis thins over it, cracks, and bleeding is easily induced, very copious, difficult to control, and producing profound anæmia. The tumours may either dry and shrivel up and peel off, or disintegrate into ulcers. The number of the excrescences ranges from one to several hundreds, of all sizes, most abundant on the extremities,

who experimentally inoculated himself, from a verruga lesion, was taken ill on the twenty-second day, and died on the thirty-eighth, before any eruption appeared, with the symptoms of "Oroya fever."

* The name arose from the terrible mortality which was produced in the labourers constructing the Callao to Oroya railway, 1870-74. Oroya itself is not a place where the disease is endemic. The symptoms were those of malignant malaria with a mortality of 70 per cent., and there was no eruption, except in some of the milder cases which survived.

face, scalp, and neck, sometimes on the palms and soles, but rarely on the trunk. They may be subcutaneous, choosing then the elbows and knees, or the legs and ankles. They may be absorbed or break down into ulcers, which fungate and have an offensive discharge. Any or all of the mucous membranes may also be involved, and hæmorrhages may occur both from the mouth and anus. The liver, spleen, kidneys, or brain may be involved also. The disease generally lasts two or three months, sometimes more,* but it may be fatal earlier from hæmorrhage, or when death occurs before the eruption appears. The duration may be only a few days or weeks.

In cases which survive, there may be left profound anæmia, dropsy, or nervous complications. The mortality is from 6 to 10 per cent. in the natives, 12 to 16 among whites, or in epidemics 40 per cent., while in Oroya fever it may reach 90 per cent. The lesions consist of highly vascular, granulation tissue, cavernous tumours, which take their origin from the superficial or deeper layers of the corium, and if they disappear, do so by absorption, ulceration, crusting, or suppuration; the last is rare. Yzquierdo has found a bacillus or streptococcus larger than that of tubercle in the tissue interstices, as well as in the vessels which may be occluded by them; whether it is really the materies morbi remains to be proved.

The most important point of the treatment is the immediate removal of the patient from the endemic area; large doses of quinine have not been of much service, but large doses of perchloride of iron were successful in the treatment of the analogous cases of Mr. Aldridge of Zaruma. As in yaws, it is considered advisable to encourage the development of the eruption.

It is significant that the worst forms have occurred where large masses of earth have been disturbed; that it has disappeared where the soil has been drained; and that it has occurred chiefly among those who have bathed in or drank of the waters of the district. It would be interesting to investigate whether mosquitoes play a part in its propagation.

* There have been rare instances of a very mild outbreak of a few lesions long after the patient has left the district. In one case, two lesions appeared two years after.

FURUNCULUS ORIENTALIS.*

Synonyms.—Oriental boil; Aleppo boil; Delhi boil; Biskra or Biscara button; Gafsa button; Kandahar sore; Pendjeh sore; Annamite ulcer; Gaboon ulcer, etc.; *Fr.*, Clou de Biskra; *Ger.*, Orientbeule.

Definition.—A local disease, occurring chiefly on the face and other uncovered parts, endemic in limited districts in hot climates, characterised by the formation of a papule, a nodule, a scab, and under the last, a sharply-punched-out ulcer.

This disease is common in certain districts of tropical and sub-tropical climates from 23° to 45° N., and from 2° W. to 80° E. The local names indicate most of the localities, to which must be added the southern and eastern littoral of the Mediterranean, Crete, Cyprus, the Crimea, and Persia, where it is very prevalent.

The Puru† of the Malay peninsula is the same disease, and it is endemic in Bahia.‡ Peacocke in 1845 and Russell in 1756 first described the disease as they saw it in Aleppo. Natal sore is probably "the Veld sore."

Symptoms.—It is an entirely local disease, unattended by constitutional disturbance, but it has a period of quiescence after inoculation of from three days to several months. It occurs chiefly in uncovered parts, especially the face, any part of which may be attacked, but the cheeks, angles of the mouth, alæ nasi, the ears, and the orbits are the favourite seats. The scalp is never attacked; it may occasionally be seen on the extremities, especially the back of the hand or foot, but is quite exceptional on the trunk or pubes. Commonly, there is one so-called boil,

* *Literature.*—*St. Louis Atlas*, plate xxxii., Model in Coll. Surg. Museum, No. 317, Dermatological Series. "Delhi and Oriental Sore," by Dr. J. Murray, *Trans. Epidem. Soc.*, vol. ii. (1883), p. 90—a good account with photographs. Hirsch, *loc. cit.*, vol. iii., p. 668, with bibliography. Woolbert of Meshed sent me an interesting series of drawings made on the spot, together with many clinical observations which I have incorporated in the text.

† "Puru, a contagious form of Lupus occurring in Malay," by W. C. Brown, Penang, *Brit. Jour. Derm.*, vol. v. (June, 1893), p. 161, with photograph.

‡ De Souza of Bahia, Portuguese Thesis, 1895; abs. *Brit. Jour. Derm.*, vol. ix. (1897), p. 129. Tuliano in 1890 also described it as a disease of Bahia.

but there may be several, and as many as ninety have been counted scattered over the face and body. It begins as a red papule, like an irritated mosquito-bite, gradually enlarges to the size of a pea or bean, of a dull red colour, and the surface is undisturbed, smooth, and shining for weeks or months, but with a lens, the red surface can be seen to be studded with deep-seated, yellowish-white points like milium.

Then, from a small central aperture, thin, clear, serum begins to ooze, and dries into a closely adherent brown crust, which gradually enlarges in thickness and area. Beneath this scab, the nodule gradually disintegrates, until a round ulcer from three-fourths to two inches in diameter is formed, with a red areola beyond. The edges are sharp and irregular, the ulceration may penetrate into the subcutaneous tissues, the floor is uneven, fungating in one part and disintegrating in another, secreting a thin offensive pus, which, if allowed to dry, forms thick, adherent crusts. The primary ulcer is small, and may remain so, but ulcers several square inches in area may be formed by the coalescence of secondary ulcers round it. After some weeks or months, the fungoid granulations give place to more healthy ones, which gradually fill up the excavation more or less completely, and the sore ultimately cicatrises, the scar being more or less puckered towards the centre, and pigmented of a uniform brown colour; the whole process lasting three to twelve months, or even two years. Some cases last much longer than this, by the sore breaking down repeatedly after cicatrisation, healing in winter and ulcerating in the summer. From reinfection, fresh regions of the body may be invaded several years after the original sore has healed. Uncomplicated cases heal and leave only scars which may disfigure the face and cripple the limbs by their contraction. If secondary complications occur, such as lymphangitis, erysipelas, or glandular enlargements, or the ulceration is very extensive with cachexia, from leprosy or other cause, there may then be danger to life. Small nodules beyond the ulcer sometimes form along the course of the lymphatic vessels, but the glands as a rule are not then enlarged.

Etiology.—No sex, race, age, or nationality gives exemption when brought within its influence. At the same time, it is most common in children after the second year, rarely appearing before that, and in Aleppo, few native children reach the age of seven

without having had it; it may, on the other hand, affect people of forty or fifty, or even older. As a rule, strangers do not get it until they have been some time in the district, but occasionally, only a few days' sojourn is sufficient, and in some people, like leprosy, it only appears after they have left the district. Its strict limitation indicates that climate has some influence, but it is usually considered to be independent of the nature of the soil. Besnier, however, disputes this, and Tilbury Fox considered that it was of malarious origin. It is seen chiefly in the latter part of the summer and in autumn, *e.g.*, in September, October, and November in sub-tropical climates, and in the first part of the cold season in the tropics. Numerous theories have been put forward to explain how it is excited, and a considerable body of evidence favours the idea that it is the water of the district, which contains the infecting parasite; and the members of the Government Commission to investigate the Delhi sore were of opinion that it gained access to the body, not by drinking the infected water, but through some abrasion or scratch while washing or bathing in it. This Commission, of which Dr. J. Murray was president, and since that Depéret and Boinet also, have definitely proved that it is inoculable both in men and animals, and flies and other winged insects are plausibly considered by Laveran to be frequent carriers of the infection. There is no reason to believe it to be hereditary.

Pathology.—The balance of evidence is in favour of its being an infective and destructive inflammation, set up by a vegetable organism, but, in spite of numerous investigations, the exact organism has not yet been demonstrated. Smith's, Fleming's, and Carter's observations were clearly erroneous. Cunningham's monadines (refractile bodies larger than lymph corpuscles), according to the more recent investigators,* Riehl and Paltauf, are the same as the hyaline globules which they have described, and not, therefore, parasites at all.

Depéret, Boinet, Duclaux, Chantemesse, and Poncet de Cluny, however, have found diplococci, but not the same, both from the boil itself, and from blood near it, and inoculation with culture fluid failed to produce the disease; for though suppuration and

* "Zur Anatomie und Ätiologie der Orientbeule," *Viertelj. f. Derm. u. Syph.*, vol. xiii. (1886), p. 805, gives a good summary of previous investigations on these points.

even death in animals was produced, the symptoms were very different from Oriental boil. Paltauf's inoculation experiments were also negative. Leloir* obtained an organism similar to those of Duclaux and Heydenreich, and considers it in all probability the pathogenic agent; it consists of cocci in twos or conglomerations. Auché and Le Dantec† found streptococci which produced on the rabbit something like the original sore. De Souza's observations support those of Duclaux. On the other hand, Geber,‡ who investigated the matter at Aleppo, believes that there is no specific disease at all, but that it is a medley of syphilitic, lupus, strumous, and other ulcers, all classed as the one disease. Although, doubtless, such errors are often made, there is no doubt that there is an endemic ulcer *sui generis*.

Anatomy.—Unna § gives a summary of the anatomical investigations, and concludes that the process is a chronic sero-fibrinous inflammation of the whole cutis, which leads in the centre to necrosis, softening, and consequent ulceration, comparable to tertiary syphilitic ulceration, and considers that the lesion stands midway between an ulcer and a new growth. In De Souza's thesis observations there was hypertrophy of all the layers of the epidermis, but chiefly of the rete, with downgrowths and epithelial nests like those of epithelioma. There was cell infiltration, either as single or grouped islets or diffusely infiltrating the corium or even below, and it was in these infiltrations that the epithelial nests were found.

Diagnosis.—In the district where it is known to be endemic, there would be no difficulty. The isolated papule developing into a nodule, and this exuding, crusting, and then disintegrating into an ulcer under the crust, and its situation on the face or other exposed part, constitute a distinctive set of symptoms; but as so experienced an observer as Murray considers this affection identical with yaws, it may be as well to compare the two affections, which doubtless have some points in common, but have many important differences.

Yaws is preceded by febrile symptoms; *Oriental boil* by none. In yaws, the lesions are always multiple and often in crops; the boil is single as a rule, and if more than one, they are rarely numerous; while both attack the face, yaws prefers the palms and

* Leloir et Vidal, 1^{re} livraison, plate vi., 2^{me} liv., p. 87; also Loustalot, "Le bouton de Biskra," *Thèse de Lille*, 1888, contains Leloir's observations.

† Auché and Le Dantec, Note on "Biskra Button," *Archives Clin. de Bordeaux*, October, 1894. *Abs. Brit. Jour. Derm.*, vol. vii. (1895), p. 98.

‡ *Archiv f. Derm. u. Syph.*, 1874, Heft iv.

§ *Unna's Histopathology*, p. 476, with pathological references.

soles; the boil, the back of the hands and feet. The lesions of both, are papules succeeded by nodules, but in yaws the epidermis splits off in a few days, and the whole eruption is developed in from two to four weeks, but the nodules of the boil remain unchanged for weeks or months. When the crust of the boil is removed, an ulcer is exposed; when that of yaws is removed, a moist tumour is brought into view, and yaws never ulcerates, except when irritated, and in cachectic subjects. The yaws tumours dry up and fall off, leaving no scar; the boil necessarily leaves a deep scar. Finally, yaws, while very prevalent among the coloured races, seldom attacks Europeans, while the boil impartially attacks all within its sphere of influence.

Prognosis.—This is decidedly good for recovery, a fatal issue being rare, and only in very cachectic individuals; but disfiguring and disabling cicatrices may be left, unless the case comes early under treatment. The patient is not, however, protected either from recurrences or fresh inoculation.

Treatment.—In the early or “mosquito-bite stage,” Murray recommends the actual cautery to completely destroy it; when available, Paquelin’s or the galvanic cautery would be the most convenient means for the purpose, but it is seldom seen in this stage. I should be inclined to try 3 per cent. carbolic acid injections in the same way as for carbuncle, round the boil area before it has broken down. Woolbert, practising in Meshed, Persia, where the disease is very common, finds that, when the whole boil area has ulcerated, scraping away the granulations and applying nitric acid produces rapid healing. Other caustics, such as caustic potash, or the fuming acid nitrate of mercury, solid nitrate of silver, or pure carbolic acid, are also useful. After destruction of the diseased tissue, the ordinary treatment for simple ulcer is sufficient, *e.g.*, carbolised or boric lint, or corrosive sublimate lotion, under oiled silk, or iodoform dressings may be applied. The prophylactic treatment is to avoid the infected water, both for washing and drinking, unless it has been boiled. Dr. G. Ranking,* like Fox and Besnier, regards the ulcer as of malarial origin, and says that if large doses of arsenic or quinine are given, the ulcer heals readily with the simplest local treatment. Frog-skin grafts greatly expedited cicatrisation in large ulcers. Gaucher and Bernard found that in “Annamite

* *Lancet*, August 27th, 1887, p. 413.

ulcers" they healed readily in a month with simply ten minutes' spraying every day with boiled water and compresses of the same constantly applied. No internal medication was employed, and they regard antiseptics as positively injurious. Petersen was successful in healing an "Aleppo sore" with the Finsen light with the minimum of scar, but it required numerous exposures; probably the Röntgen rays would act more quickly and equally efficaciously, and at all events would be more easily applied.

The **Madagascar ulcer**,* according to Fradel and Legrain, is a special disease, attacking the extremities with a long duration, leaving hard white parchment cicatrix, with a tendency to recur, and it may implicate the deeper tissues including the bones. It is thus differentiated from Biskra button, and appears to belong to phagedæna tropica.

Veld Sore. (*Synonym.*—Natal Sore?) The South African war has made this sore only too familiar to our soldiers and surgeons, and Ogston, Harland, Harman, and others have written upon it. It attacked the cavalry twice as often as the infantry. The sores were usually multiple, occurred mostly on the hands and forearms, chiefly on the backs, and also on the feet and legs, but they were infrequent on the face, and on the less exposed parts of the body. A breach of surface was nearly always the point of entry, and Harland suggests that it is conveyed by the large brown horseflies, which were very abundant. It begins as an itching pin's-head papule, vesicle, or pustule, which rapidly increases in size, with at first clear yellow serous fluid, which is soon turbid, easily ruptures, and becomes a painful dirty-looking sore, usually not larger than a shilling, but varying from a threepenny-piece to a crown, and covered with a dirty scab exuding pus and serum; some inflammation of the lymphatics and glands are often present. Harland says that sometimes there may be a huge flat pustule covering the whole of the back of the hand and up to the forearm. Ogston says that supuration is not a characteristic feature, the border being vesicular with a red areola, which on the arms and legs look like "lazy blisters," which slowly spread but will not heal, and it

* *Annales de Derm.*, vol. vii. (1896), p. 1088, and (1897) p. 781.

is essentially epidermic ; and Harman describes it as a vesicle or blister in the stratum lucidum. Cultures yielded a diplococcus growing freely in ordinary media, and in some respects resembling staphylococcus aureus. In aerobic cultures it grew as a diplococcus. There seems strong reason for believing that it is a semi-tropical variant of impetigo contagiosa, or its crusted form "ecthyma."

The cure is easily affected, Harland says, by the application of boric or carbolic acid fomentations, and subsequent dressing with boric ointment. No doubt the usual treatment for the destruction of pus cocci would be effectual.

Harman says that the veld sore was found in the high barren table-land, while the Natal sore was found in the lower parts of Natal, where vegetable and animal life were abundant, so perhaps they are different affections. The veld sore yielded staphylococcus pyogenes aureus both to film and culture preparations.

The **Barkoo**, or **Barcoo Rot**, of Queensland appears to be a similar affection to the "veld sore."

GRANULOMA INGUINALE TROPICUM.*

Synonyms.—Groin ulceration ; Ulcerating granuloma of the pudenda (Galloway).

Definition.—A tropical disease characterised by chronic ulceration of the groin and neighbourhood, with papillary overgrowth.

We owe the first clear account of this affection to Conyers and Daniels of British Guiana in 1896. It appears to be fairly common in British Guiana and the West Indies, but it has also been observed in India by J. Maitland and in Fiji by Daniels ; probably it occurs in most tropical climates, but is confused with syphilis and yaws.

A case in a negro came under my care in 1888, and subsequently under that of Pringle ; but while we recognised that it

* *Literature.*—Conyers and Daniels, "The Lupoid form of the so-called 'Groin ulceration' of British Guiana," *British Guiana Medical Annual*, 1896. (Georgetown, Demarara : Baldwin & Co.) "Ulcerating Granuloma of the Pudenda," James Galloway, *Brit. Jour. Derm.*, vol. ix. (1897), p. 133 ; a good abstract of the above paper and original observations on histology, illustrated. Also the clinical history of the case which came first under me and then under Pringle in 1888 and 1889.

was a special form of disease, there was no published account to show that it was well known in the tropics. He had left the West Indies five years when the disease began, six months before I saw him, as a flat sore on the top of the penis, behind the corona, attributed to impure intercourse nine days previously. He told Pringle that it began as a pea-sized boil in the right groin, which was scratched into a sore, and spread down the side of the scrotum and up along the groin. Probably that was true for the groin lesion, but the penis was the primary point of infection. Conyers and Daniels say that papules are the first lesion, and that pink, smooth, shining nodules develop from them half an inch or more in diameter. These break down spontaneously, or from abrasion, and superficial, spreading ulceration is produced. At first smooth, it soon develops, an easily bleeding papillary overgrowth, often with copious serous discharge, very offensive and *sui generis*. The nodule may heal with the formation of a good deal of firm fibrous tissue, but it often breaks down again, and the disease extends by the aggregation of fresh nodules which form at the margin, and are especially large when seated at the hair or sebaceous follicles. The heat and moisture of the folds favour extension, and the discharges of the sores may inoculate the skin traversed by them.

In males, the disease usually starts in the groin or pubes, and extends in a line about half to three-quarters of an inch wide, the whole length of the groin, and sometimes on the perinæum, and as far as, and even round, the anus; it may also extend over the pubes, where it is often very extensive, and join the lesion of the opposite groin. The penis may also be primarily or secondarily involved, and in my case, there was a collar of ulceration at the neck of the glans.

In females, the labia or vagina are the usual starting-point, and in them extension along the perinæum, to the anus is especially likely to occur, involving the mucous membranes sometimes to a considerable extent.

The aspect of a fully-developed linear lesion is that of superficial ulceration within a sulcus with a papillary, more or less crusted growth on each border, the whole situated on a raised indurated ridge. Where adjacent hot moist surfaces are in juxtaposition, the disease may be in plaques instead of ridges. Detached lesions also exist, and there may be cicatrization at

some points, the scar being dense and irregularly pigmented and if it is extensive, the blocking of the lymphatics may give rise to more or less elephantiasis. While, however, it is cicatrising at one point, it may be breaking down at another, and so all stages may sometimes be seen together. In this way, the course is very variable, and the duration is from a few months to several years.

Etiology.—The disease attacks both sexes, but is more frequent amongst females, at any time after puberty, and generally young adults, twenty-seven years being the average of Conyers and Daniels's cases. Negroes are said to be especially liable to it,

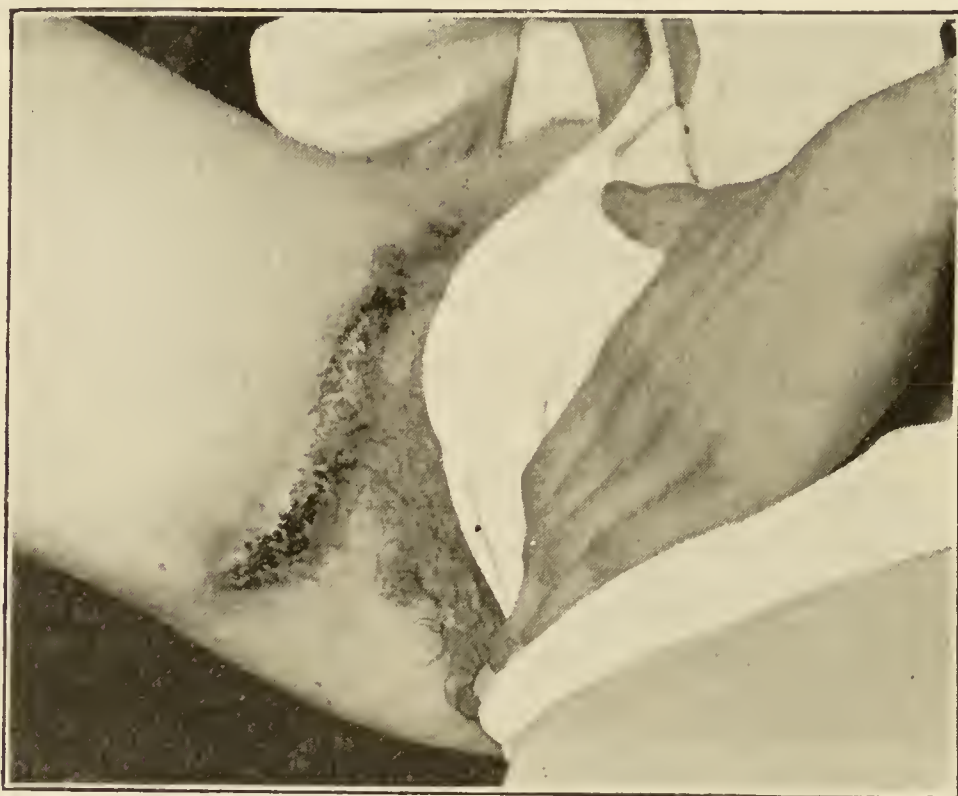


Fig. 62.—Papillary growth in the groin identical with granuloma inguinale tropicum.

but, as already said, Maitland has met with it in East Indians, and he is strongly of opinion that it is of venereal origin but not syphilitic. Daniels has also observed it in Fiji among imported Melanesians, who, like negroes, are particularly liable to tuberculosis and keloid. The influence of race is borne out in the case of my negro patient, who contracted it in Paris so many years after he had left the West Indies. Nevertheless a closely analogous condition may occur even in England. A youth of eighteen came to University College Hospital on May 4th, 1897, with a linear lesion in the groin five and a quarter inches long, and in width averaging three-quarters of an inch, but tapering to one-third of an inch at the upper end.

Portions of the lesions were healed and of a purplish-red colour, but the greater part was ulcerating with papillomatous surface. He stated that it began as a small pustule nine years previously, which broke down into an ulcer, and had gradually spread into its present condition, but it had altered very little for the last four years. There was no evidence of phthisis in himself or family, and he lived in the country under healthy conditions. Histologically, Galloway confirmed its similarity to the tropical form of the disease, but the latter is contagious.

Pathology.—Galloway,* who examined some of Daniels's material, pronounces it to be structurally a granuloma, with much elongation of the papillæ and rete proliferation over them. No organism has been isolated, but to my mind it is strongly suggestive of pus cocci infection.

Treatment.—Erasion and subsequent swabbing with carbolic acid appears to be the quickest and most satisfactory method of treatment, and if thoroughly done there will be no recurrence.

PAPILLOMA OF THE SKIN.†

Synonym.—Acanthoma.

Corns, warts, horns, and some nævi, were all formerly considered by general pathologists as examples of "papilloma of the skin"; and various kinds of tumours, such as sarcoma, carcinoma, epithelioma, and fibroma, as well as morbid processes like syphilis, lupus, eczema, and sycosis, are liable to develop papillary growths.

Virchow, Auspitz, Unna, and others have pointed out that all the growth is really epithelial, and that there is only an appearance of growth of the papillæ; Auspitz and Unna, therefore, advocate the substitution of the term acanthoma ‡ (growth

* *Loc. cit.*, with plates.

† *Literature.*—Author's Atlas, plate lxxv., shows a papillary epithelial growth on the face of a case of xeroderma pigmentosa. The epithelial structure of this growth is shown in fig. 33. Hardaway, "Clinical Study of Papilloma Cutis," *Amer. Arch. of Derm.*, vol. vi. (1880), p. 387—a good general review of the whole subject. Morrow, "Tuberculosis Papillomatosa Cutis," *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. vi. (1888), pp. 361 and 401, well illustrated, gives an account of very extensive primary growth, and discusses the question of papilloma. "Das entzündliche Haut-Papillom," Roser, *Arch. der in Heilkunde*, 1866. Weil in *Viertelj. f. Derm. u. Syph.*, 1874, p. 37, with coloured plate.

‡ Unna's *Histopathology*, p. 784.

of the prickle cell layer). It is probable, however, that the old term will be retained for a long while, but it must be understood that it is here used as a clinical term for various papillary growths. While all acanthomata are not papillary, *e.g.*, molluscum contagiosum, they are probably all of microbic origin, and most, if not all, of the secondary growths are due to pus cocci.

An attempt has, however, been made by Neumann, Duhring, and some other dermatologists to give the term papilloma a special meaning, on the strength of certain cases which have been reported as inflammatory skin papilloma by Weil and Roser, and under other names by various writers. It consists of a raised cauliflower excrescence, very like verruca acumina, already described, varying in size, with fissures and sinuses, which secrete a yellowish puriform and sometimes offensive fluid, occurring at any part of the body and at any time of life. I once saw a patch of this kind on the hip of a tubercular man of twenty-five, about one inch in diameter, projecting about one-fourth of an inch, with a scabbed covering, and hypertrophied, readily bleeding papillæ. There was no history of previous lesions, but Hardaway thinks such growths are always secondary to ulcers or other lesions, and calls them all symptomatic papillomata. Beigel's oft-quoted case of **papilloma area—elevatum** in a child *æt.* twelve months, suffering from convulsions,* was evidently a case of bromide rash, in which the appearance of the papilloma is not infrequently produced when the scab is removed from the larger lesions, and they are also sometimes followed by papillary hypertrophy. The term "neuropathic papilloma" is often applied to the band form of warty growths, which really belong to the same category as ichthyosis hystrix.

Instead of being in a single tumour there may be a patch of papillary growth. An old lady received a blow on a patch of eczema on the thumb; four months later there was a growth one and three-eighths by one inch in area, raised up a quarter of an inch, papillomatous in the centre, with soft granulation tissue at the border, with the skin over it sound, but livid red, and looking like a lupus papillomatosus; it was gradually spreading. Loretin was first applied, and then salicylic acid gr. xv., unguentum zinci oleatis ʒj, under which it got quite well. The fungations which develop in the axillæ and groins in pemphigus vegetans are

* *Path. Trans.*, vol. xx., p. 414.

probably of the same nature, and can be removed by iodoform and similar applications.

GRANULOMA PYOGENICUM.*

Synonym.—Botryomycosis hominis.

Definition.—A fungating tumour produced by pus cocci.

Veterinary surgeons first used the term botryomycosis for an affection which is met with in bovines, the pig, and dog as a fungating granuloma which occurs most commonly in the testicular cord of the horse after castration, and may be either in or outside of the scrotum, inguinal canal, or abdomen. Also as fibrous tegumentary tumours, in the lung, maxillary, and pental sinus, which may be generalised. Poncet and Dor have now identified a similar condition in the human subject in the form of neoplastic fungating ulcerative granulomata, from a pea to a nut, developing by means of a pedicle from the derma. They met with it in the fingers, thenar eminence, and shoulder. Histologically the growth was a "granuloma," and from it a pure cultivation of *staphylococcus pyogenes aureus* was obtained. They are probably always the result of suppuration, and are really only exaggerations of what used to be popularly called "proud flesh." The following are examples:—A moist cherry-red tumour the size of a large pea, developed on the palm of a lady following suppuration. It was cured by ligature. Another was a tumour the size of half a walnut just below the knee, bright red and lobulated. It developed on a dermatitis, took three years to get as large as a raspberry and one more to reach the above size. It was excised under the idea that it was sarcoma, but on account of its age was composed largely of fibrous tissue. The idea entertained by Dor, Spick, and other writers that botryomycetes are the real pathogenic agents is, I believe, quite erroneous. Pus cocci are undoubtedly present and quite sufficient to account for the lesion—a view I am glad to find held also by Sabrazés, Laubie and Jaboulay, and Bodin.†

* "Botryomycosis humaine," Congrès de Chirurg, de Paris, October, 1897; and good abs. in *Brit. Jour. Derm.*, vol. x. (1898), p. 209.

† "Botryomycose humaine," E. Bodin, *Annales de Derm.*, vol. iii. (1902), p. 289.

GRANULOMA ANNULARE.*

Definition.—A disease characterised by an aggregation of nodules or papules into a ring, which enlarges peripherally while it involutes centrally.

In 1893 I described the first recognised case of this disease as a case of lupus erythematosus which resembled lichen planus; since then I have had four other cases; Pernet, while acting for me, has recognised another, Pringle† and Sequeira each have shown a well-marked case to the Dermatological Society of London. These are all the cases I know of, unless lichen annularis is found to be the same disease.

The lesions occur chiefly about the wrists and hands, but also on the neck, especially the nape, where in the form of papules they have been present in four out of the eight recorded cases (three of mine and Pringle's case); the elbows and knees (one case); behind the ears, the face (one case), and near the border of the hair are less usual positions.

The most striking feature is the formation of rings made up by the aggregation of nodules from a millet to a hemp seed in size; these, although partially coalescing, nearly always remain recognisable as the component elements of the ring. The ring is oval or round, and clears in the centre while it enlarges peripherally; sometimes part of the border also involutes and leaves a crescentic lesion with the concave portion sloping down into the normal skin. The centre may be slightly reddened, normal, or slightly atrophic; the border raised from a sixteenth to an eighth of an inch above the surface more or less distinctly nodular, abrupt on the outer, sloping on the inner surface, and firm to the touch. The colour may be deep red, pale red, or almost white, with a narrow red or violet areola. The surface may be slightly scaly, or corrugated, or even warty-looking (Pringle) to a slight degree, and one of my patients had had numerous warts on his hands, another had a single wart. The suggestion of a form of lupus erythe-

* *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. xii. (1894), p. 1, with coloured plate. Reproduced in my Atlas, plate lxxvii., figs. 1 and 2, together with a brief note of another case. Other cases are published under the name now employed in the *Brit. Jour. Derm.*, vol. xiv. (1902), p. 1, with coloured and histological plate.

† Pringle, *Brit. Jour. Derm.*, vol. xi. (1899), p. 435.

matosus struck me at first in some of the cases, and Pringle compared some of the lesions to those of lichen planus, to which I had also called attention.

The disease usually commenced as a nodule or aggregation of nodules, one patient described a mattery head on some of them, and the number of plaques was from one to about a score in different cases. The development was slow, varying from months to years; my first case was of four years' duration, my last six months, but some lesions involuted spontaneously.

In the oldest woman, who had a strong tubercular history, the single patch on the wrist gradually changed its character, and developed into what appeared like a lupus verrucosus, which was nearly cured with salicylic acid plaster. She had a single nodule on the nape close to the hair. In the boy of eleven, the lesions were only on the wrists and elbows and knees. On the right elbow, instead of a ring, there was an irregular aggregation of discrete pale purplish-red papules; there were some similar papules on the right knee and a ring undergoing involution; on the left knee, a ring had gone, leaving only a red stain. This boy had a common wart on one palm.

In Pringle's case, the neck, face, scalp, and back of the right wrist were affected, in the latter as a band of flat angular papules like verrucæ planæ. There were also numerous discrete papules disseminated over the forehead and scalp; the patient had some also at the nape.

Etiology.—Seven were males, six between twenty and forty, and one eleven years of age. One was a female, æt. fifty-two.

In one of my cases, there was a strong family history of phthisis, in another they were said to have weak chests. In one, æt. eleven, the father was very gouty. In others, there was no evidence of disease in themselves or their relatives. My fifth case was a gentleman, æt. thirty-four; he was positive that it began as a cut which he picked. It had been present four years.*

Pathology.—I have microscopically examined a papule from the nape of my first case, and found that the greater part of the papule was made up of a dense mass of cells, the chief portion of which was situated between two hair follicles, which were,

* The case is published in *Brit. Jour. Derm.*, vol. xiv. (August, 1902), p. 307, as the seventh case. Sequeira's, the eighth case, was shown after my report was sent in, and is published in the July number, p. 270.

however, partially embraced by the cell mass. There was very little increase of the horny layer, but the prickle cell layer was enormously thickened, and in one section it appeared to be prolonged in the course of a sweat duct. The papillæ were quite obliterated in the central portion, but not at the periphery, where they were broader, but shorter. Beneath the cell mass was a sweat-coil showing cell infiltration round it, but traced upwards it entered the cell mass, which was almost confined to the superficial part of the corium. At the side, there was a small amount of cell exudation about some of the hair follicles away from the main papule, but it was not very marked. The sections were made several years ago, before differential staining to show the nature of the component cells was in vogue.

Quite recently* I have examined a nodule from the skin over the second knuckle about a quarter by one-eighth of an inch. It presented quite a different picture from the above nape nodule, and was much more like the histology of Galloway's case of lichen annularis, and induces me to admit the probable identity of the two affections. *Vide* p. 409.

The histological changes were most marked in the deep layers of the corium. In most of the sections, the cell infiltration in the papillary layer, and immediately below it, was very scanty, but in the one illustrated probably from the centre of the nodule, the cell infiltration, reached quite up to the epidermis. The cells were not massed together, as in the nape nodule, but in small clumps round the vessels, and were most abundant round the sweat coils. They were apparently a mixture of connective tissue cells and leucocytes. The vessels were dilated, the prickle cell layer was much thickened, and so was the corneous layer, but to a smaller extent. It will be noted that the centre of the nodule was in the line of a sweat duct, and the general aspect was that of a chronic inflammation round the sweat coil and duct. The primarily deep seat of the inflammation is unlike any form of lichen. At the same time this nodule does not suggest a granuloma.

Clinically the extreme indolence of the disease, many of the lesions remaining for years with scarcely any change, show that

* August, 1902. After this article had gone to press I obtained a nodule from my last case, and the sections were made from the fresh tissue. A more detailed examination will be made later on.

it is no ordinary inflammation, and its circinate character and unsymmetrical distribution on exposed parts suggest a microbic origin.

Dubreuilh found the epidermis almost unaltered. In the middle of the dermis there was a focus of cellular infiltration, while the superficial part of the cutis, papillary layer, and the diffuse part including the sweat glands were quite free.

The cells were infiltrated between the bundles of connective

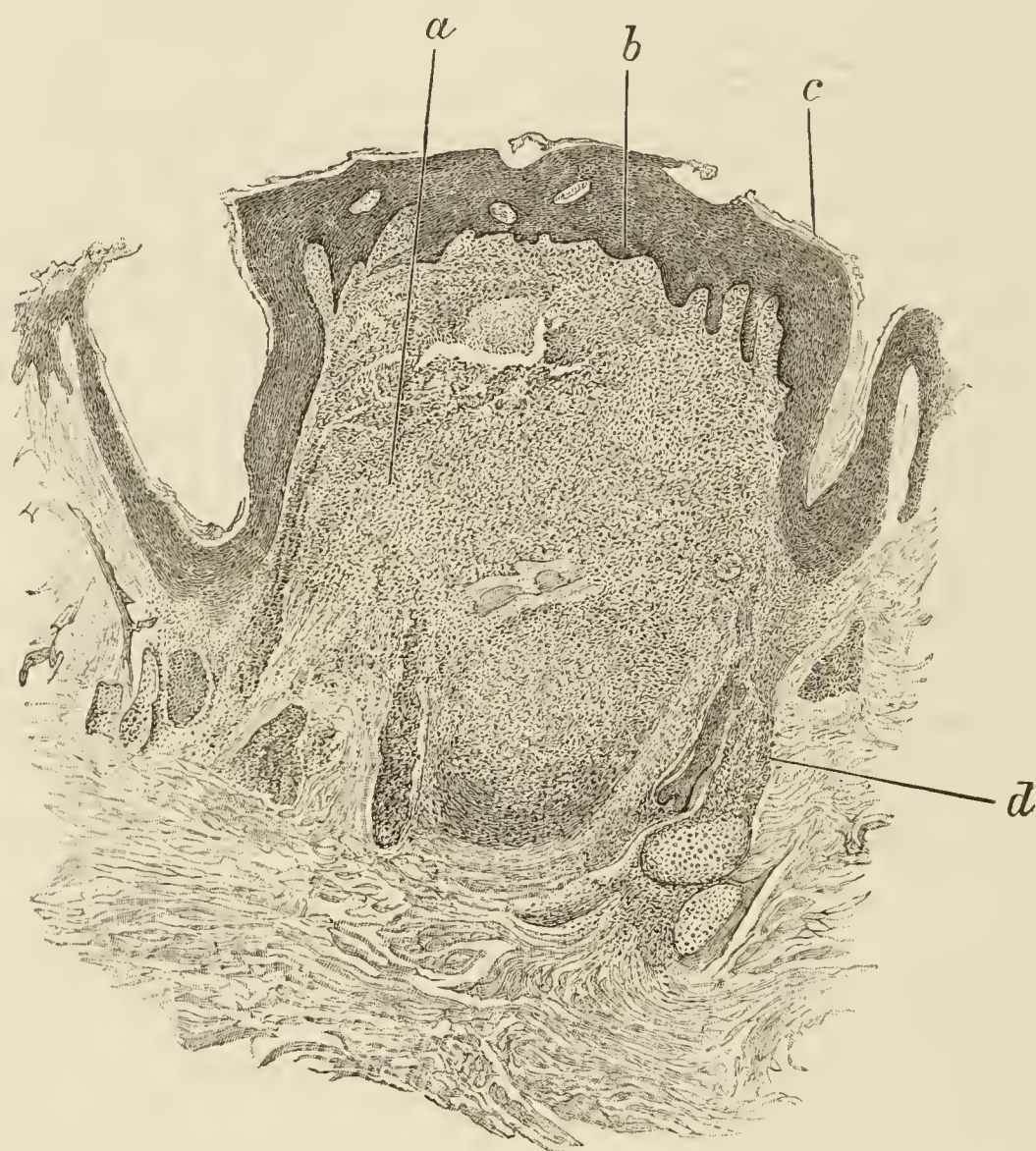


Fig. 63.—Papule from nape, showing, *a*, dense cell mass in the papillary layer of the cutis; *b*, increased thickness of prickle cell layer; *c*, unaltered horny layer; *d*, portion of hair follicle and sebaceous gland. \times Ross 1 in. 16 in. tube.

tissue, but this and the elastic tissue were unaltered. The cells he considered to be connective tissue cells. There were no giant cells and but few mast cells.

Diagnosis.—The disease it most resembles is lichen annularis. In both there are ringed lesions with crenate borders which occur on the hands; both are nodular and begin as nodules. Granuloma annulare is much more distinctly nodular throughout its course, and begins from an aggregation of a group of nodules,

while lichen annularis starts from a single nodule and spreads into a ring, and in a fully-formed ring the nodular origin is obliterated. Probably this difference in the mode of origin is one of the most distinctive features, but the histological resemblance in the granuloma and lichen annularis cases of the lesions from the hands seem to outweigh the differences, and their pathology is probably the same in spite of the great contrast presented by the nape nodule. It must be admitted that the histology

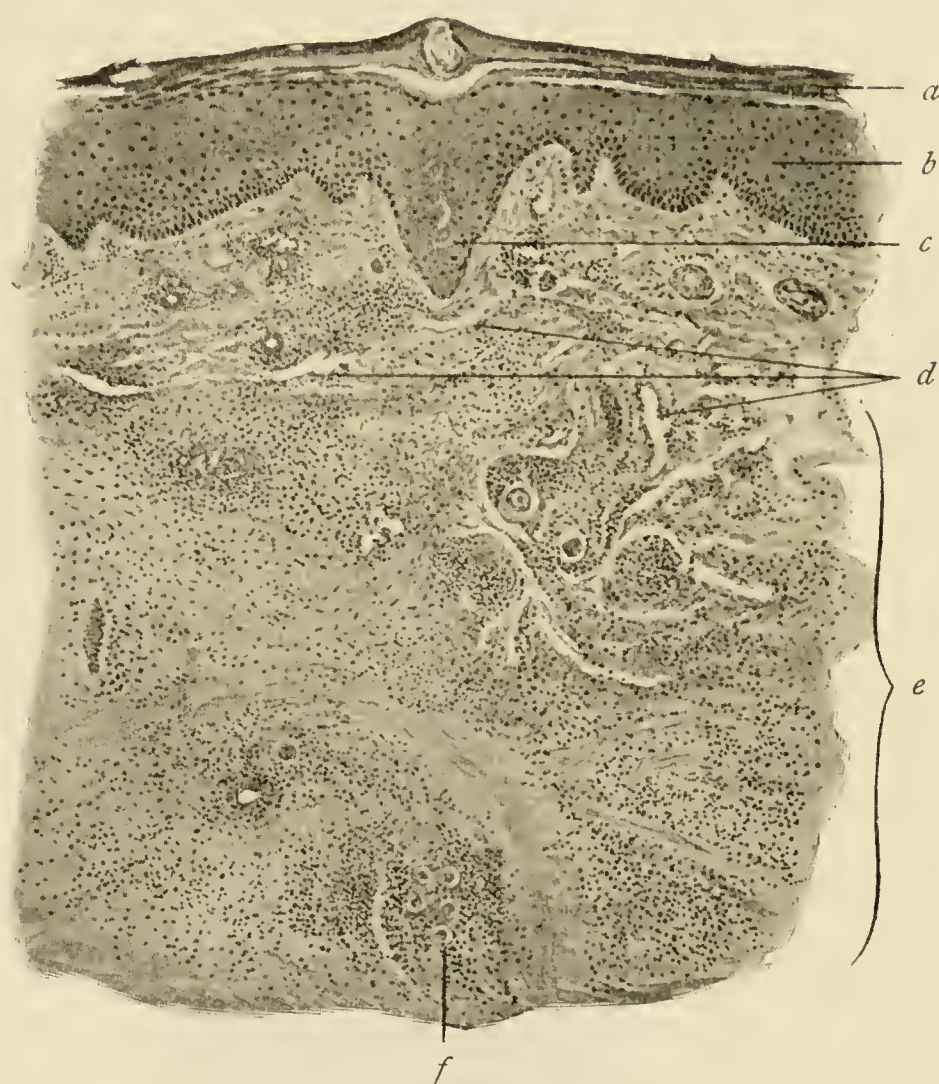


Fig. 64.—Nodule of granuloma annulare from knuckle. *a*, thickened corneous layer; *b*, thickened rete; *c*, sweat duct; *d*, dilated vessels; *e*, cell infiltration, most marked in sub-papillary layer; *f*, sweat coil with dense cell infiltration.

of the Dubreuilh case, judging from the description, does not correspond with either Galloway's or my sections.

Treatment.—The most effectual treatment is the application of a mercurial plaster; the Beiersdorf 255 paraplast, which also contains carbolic acid, is one of the best. The lesions slowly disappear with this, and occasionally some of them involute spontaneously, but, as already seen, this is exceptional, the disease lasting for years if not treated.

CLASS IX.

*MORBI APPENDICIUM—DISEASES OF
THE APPENDAGES.**A. DISEASES OF THE SWEAT GLANDS.*

AFFECTIONS of the sweat glands are “functional,” in which the quantity or quality of the secretion is altered, and “organic,” due to obstruction of the duct; the latter may be non-inflammatory,

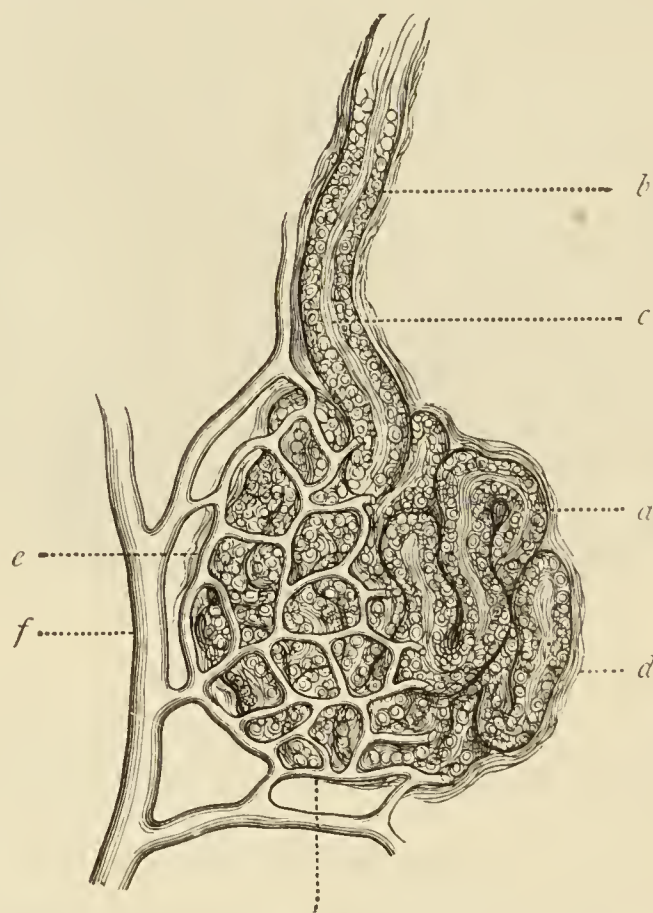


Fig. 65.—A NORMAL SWEAT GLAND, highly magnified (Neumann).

a, sweat coil with secreting epithelial cells; *b*, sweat duct; *c*, lumen of duct; *d*, connective tissue capsule; *e* and *f*, arterial trunk and capillaries supplying the gland.

as in sudamina, or with inflammation in or around the sweat apparatus, either primary, as in miliaria papulosa, or secondary to the obstruction, as in miliaria vesiculosa. Hydradenitis, or inflammation of the sweat coil, is described along with furunculi.

Pompholyx or dysidrosis and lichen planus, both of which have, in my belief, their seat in or about the sweat apparatus, are described among the general inflammations of the skin, as this view is not generally accepted. There are certain forms of eczema and psoriasis in which the primary lesion appears to be situated in and about the sweat pore, and Mibelli's porokeratosis is named on the belief in a similar connection. Arsenical keratosis of the palms and soles also commences at the sweat pores, and probably the keratoses in connection with hyperidrosis have the same starting-point.

HYPERIDROSIS.*

Deriv.—ὑπέρ, super ; ἰδρώς, sweat.

Synonyms.—Excessive sweating ; Idrosis ; Ephidrosis ; Sudatoria.

Definition.—A functional disorder of the sweat glands, in which the secretion is excessive.

Hyperidrosis may be general or partial, slight or severe, acute or chronic.

Universal sweating may be symptomatic, as in acute rheumatism, phthisis, hectic fever, ague, rickets, or the so-called "sweating sickness" of the middle ages, etc., but it is only with those forms which are apparently idiopathic that we have now to do.

Symptoms.—The sweat is often quite cold, and when general is not very excessive, except in rare instances, when it may be so great as even to be fatal.† The local forms may be paraplegic ‡ or hemiplegic in distribution, or symmetrically localised to certain regions, especially the palms, soles, axillæ, and genital regions ; and when in these hot covered parts, is often associated with bromidrosis.

Unilateral cases affecting the whole of one side of the body

* *Literature.*—*Des sueurs morbides*, by L. Bouveret (Paris : 1889).

† Myrtle of Harrogate, in *Med. Press*, February 25th, 1885, relates the case of a man, æt. seventy-seven, who, after some flying pains and fever, began to sweat profusely, and continued to do so until he died exhausted, in three months from the onset of the sweating. Richardson, in the *Asclepiad*, vol. for 1885, p. 191, records another such case, and one of hemi-erythema followed by profuse hemi-hyperidrosis.

‡ S. Mackenzie, upper half of body affected, *Clin. Soc. Trans.*, vol. xviii., 1884.

are rare; it is more often confined to one side of the head, in the domain of the fifth nerve,* or to one limb, or portion of it, *e.g.*, the ulnar nerve, but even these limited cases are not common. There is usually a bright erythema of the part affected preceding and accompanying the hyperidrosis.

The palms and soles are very frequently attacked, either together or separately, and there are all grades, from merely moisture to profuse dripping in severe cases. If on the hands, it disables the patient from social duties or from many occupations, and may lead to *keratosis*; and if on the feet, it interferes with walking, the skin becoming sodden, corrugated, and in parts red and tender, or the epidermis may be enormously thickened on the points of pressure. In two cases, one on the palms, the other on the soles, I have seen a very superficial erosion of the epidermis commencing round the sweat orifices. In the palm case, the black from his work outlined the borders of the erosions. In regions like the genitals, in contact with adjacent surfaces, intertrigo and eczema may arise. The sweating may be continuous or intermittent, aggravated when the weather is hot, or under emotion, or depression of the general health, and in the domain of the fifth, is often excited by mastication. It may be temporary or permanent, and last for weeks or years.

Etiology.—Neither sex, age, nor social condition has any influence on its production. Faulty innervation is probably the main cause, but we can rarely detect the starting influence which produced the effect. In several instances of localised unilateral sweating, there has been suppuration, presumably involving the nerve supply of the part, *e.g.*, suppuration of the parotid followed by sweating of the face of the same side, or bubo followed by inguinal sweating. In other cases, there has probably been an undetected neuritis, which possibly, may in some instances, be gouty. In slight degrees, *e.g.*, in the palms, it is often congenital, and in rare instances, hereditary, or it may be vicarious, as in local sweating, *e.g.*, of the palms in ichthyosis.

Pathology.—Claude Bernard's experiments showed that section of the sympathetic was followed by hyperidrosis, and Brown-Séquard's, that excitation of sensory nerves would produce sweating. In a case of Traube's, profuse sweating came on a few days

* *Brit. Jour. Derm.*, vol. iii. (1891), p. 357, a case in Unna's clinic; the centre of the face was affected, especially the tip of the nose.

before death, and at the post mortem, a tumour was found in the cord, half an inch below the medulla oblongata. Weir Mitchell describes localised sweatings after division of a nerve by gunshot injuries, etc. These facts lead to the inference that injury or disease, which directly or indirectly interferes with the function of the sympathetic of the affected region, is the proximate cause of the excessive secretion. The fluid itself is normal in its constituents. A case of profuse post-mortem sweating some hours after death is recorded by J. A. Cones.*

The *prognosis* is variable, and there are seldom data to enable an opinion to be formed.

Treatment.—Careful investigation into the general health should be made, and any defect rectified. Success is more hopeful in acquired than in congenital cases. The mineral acids and nuxvomica suit many cases where there is debility; iron, quinine, and cod-liver oil are often indicated. Failing any general indications, certain special remedies may be tried. The tincture of belladonna pushed to the physiological limit is often useful, probably as a vaso-motor stimulant; or hypodermic injections of atropia might be tried, $\frac{1}{150}$ th of a grain increased up to $\frac{1}{60}$ th; $\frac{1}{8}$ th grain of agaricin is much praised by Piering. I have found ergot in full doses, such as \mathfrak{zss} or more of the liquid extract three times a day, answer well for some cases; but the best of all, in my experience, is sulphur. A level teaspoonful of the precipitated sulphur in milk twice a day is the usual dose. Where it purges too much, it may be combined with astringents, as in the following: pulv. cretæ co. \mathfrak{zvj} , pulv. cinnam. co. \mathfrak{zij} , sulph. præcipit. \mathfrak{zj} ; a teaspoonful to be taken twice a day. What its *modus operandi* may be I am not prepared to say, but it has succeeded more often than anything else in my hands, and local treatment is not required, as a rule, with it.† Krahn says that

* *Lancet*, May 25th, 1889.

† In Penwarden, U.C.H., a tailor, æt. sixty-five, hyperidrosis had existed thirty-five years. It was usually confined to the hands and feet, but at its worst affected the whole body. It was absent as long as he preserved the horizontal posture, but came on directly he got up, and was always increased in the summer months. When at its worst, he lost appetite and spirits, had a pricking sensation, and sometimes minute red papules appeared all over the hands. He had tried almost every variety of treatment, but, of all, sulphur internally did him most good, keeping the disease under for twelve months; but latterly, even that failed.

sage is a powerful antihidrotic remedy ; fifty grains of sage leaves to a pint of hot water makes an infusion, of which a teacupful may be taken three times a day, or a tincture can be made.

Acetate of thallium was strongly advocated for the night sweats of phthisis, etc., but as it produces total alopecia in a few days, it is only mentioned as a warning against it.

Local treatment is often of great assistance. Faradising the part has sometimes been successful, but belladonna ointment or liniment rubbed in is one of the best remedies. For the feet, Hebra's plan,* which he said was always successful, was to keep them closely wrapped up, each toe separately, in an ointment of ung. lithargyri, changed twice a day, and the treatment continued for a fortnight ; others recommend oxide of zinc ointment. These methods are too cumbersome, necessitate lying up, and are therefore generally impracticable, while it is by no means always successful even in acquired hyperidrosis. Duffin's modification of strapping the feet is better, as it allows the patient to go about ; it should be done evenly and firmly, with stout lead or soap plaster. Thin's plan is to dredge boric acid, very finely powdered, into the stockings and boots every day, and to put in the boots, cork socks which should be washed and disinfected in boric acid lotion daily. This is cleanly and convenient, and one of the best methods of local treatment. Tartaric acid (Frédérique) and subnitrate of bismuth may be used in the same way, or rubbed over the body when the hyperidrosis is general.

Painting the soles with a 3 per cent. solution of formalin is recommended by Gerdeck to be used three times a day.

When it is desired to check sweating in the axillæ or elsewhere for some hours, holding a very hot sponge to the part for a few minutes is effectual. A powder of 3 per cent. of salicylic acid may also be dusted on, and sponging on 1 per cent. of quinine in alcohol is recommended by Fox of New York.

Astringents, such as 1 or 2 per cent. of alum and tannin in alcohol, are also employed, and are useful sometimes.

Disinfectant soaps, such as terebene, carbolic acid, and daily ablutions, are adjuvants. Many other remedies are recommended, but there are none better than sulphur internally, and boric acid or borax locally.

* See Formulæ : Ointments, No. 10, Ung. Diachyli.

BROMIDROSIS.

Deriv.—βρῶμος, a stench.

Synonym.—Osmidrosis.

Definition.—Offensive sweating due to functional disorder of the sweat glands, or to alteration of the sweat after its excretion.

Symptoms.—It may be symptomatic, as in rheumatic fever, scurvy, syphilis, scrofula, uræmia, or after certain ingesta, etc., or idiopathic. There is generally hyperidrosis, but sometimes the quantity is normal. It may be local or general; the local is the most common, affecting the feet only, but the axillæ, groins, and perinæum may also be involved.

When affecting the feet, the odour is, *sui generis*, most penetrating and nauseous, and once smelled will not be forgotten: perhaps putrid cheese is the best comparison. The sufferer is, therefore, unfitted for society and indoor occupations. The stockings and boots are soaked with the evil-smelling fluid, and the feet sodden like a washerwoman's hands; often there is secondary redness, especially at the borders, much tenderness, and sometimes blebs are formed and walking then becomes impossible.

In other parts of the body, the odour is different, and usually not so strong, except in the axillæ, where the natural odour is much exaggerated in some persons.

In certain nervous states, and in a few persons from idiosyncrasy, pleasant odours of the sweat have been noticed, such as that of violets, musk, and pine-apple, and one of Hammond's * cases was also unilateral. Weir Mitchell has observed that in lesions of the nerves, the corresponding area exhales an odour like that of stagnant water.

Etiology.—Local bromidrosis is generally observed in young people and in the feet; it is most common in domestic servants, or others who have much standing. Some cases are due to emotional conditions, while the causes of others are quite obscure. Race has a distinct influence. Thus the negro and

* W. A. Hammond, "On Odours in Connection with the Nervous System," *New York Med. Rec.*, vol. xii. (1877), p. 460; and Monin, *Sur les odeurs du corps humain* (Paris: 1885); full abstract in *Amer. Jour. of Cut. and Ven. Dis.*, July, 1885, p. 211.

Chinaman has each a special odour disagreeable to other races, while the Chinese say we are equally objectionable to them.

Pathology.—As Hebra pointed out, the sweat of the feet is not offensive when first secreted, and Thin's investigations point to its becoming so from the presence of micrococci. These under cultivation develop into bacteria, which he calls bacterium foetidum. Moore, the botanist, thinks this bacterium is identical with that found on surface soil which reduces nitrates, sulphates, and phosphates into nitrites, sulphites, and phosphites. The micrococci may be readily seen if some of the sweat be dried on a cover-glass and stained with methyl violet. Similar micrococci can generally be found between the toes even without bromidrosis, getting there probably with dust.

Treatment.—Thin's plan locally, and sulphur internally, as described under hyperidrosis, is the most convenient and effectual treatment. The sulphur alone is generally sufficient. In the German army, rubbing the feet with mutton suet with 2 per cent. of salicylic acid is almost universally adopted, and where there is much walking has the advantage of lubricating the feet. Latterly, a 5 per cent. solution of chromic acid, painted on the feet every three to six weeks, has been successfully employed. In very obstinate cases, 10 per cent. may be used; a 2 or 3 per cent. formalin solution has many friends. Salicylate of sodium in 5 to 10 grain doses has cured some cases. For other methods see Hyperidrosis.

CHROMIDROSIS.*

Deriv.—χρῶμα, colour, and ἰδρώς, sweat.

Synonyms.—Stearrhœa or Seborrhœa nigricans (Wilson and Neligan); Pityriasis nigricans (Read).

Definition.—Coloured excretion of sweat or sebum.

Symptoms.—The first case of this very rare and curious affection was published by Yonge of Plymouth in 1709. In it,

* *Literature.*—Author's Atlas, plate lxxix. Le Roy de Méricourt, *Mémoire sur la chromidrose* (Baillière et Fils: Paris, 1864). Wynne Foot, *Dublin Jour. of Med. Science*, August, 1869, and December, 1873; Roy. Acad. Med., Ireland, December 14th, 1888; and *Irish Hosp. Gaz.*, February 16th, 1874; also Fox's case and Report of Committee, *loc. cit.* Purdon's case, *Jour. of Cut. Med.*, October, 1868, p. 247.

coloured sweating appears symmetrically distributed in various parts of the body, but chiefly about the orbital region, affecting the lower lid more than the upper; the other parts commonly involved in the order of frequency, are the cheeks, forehead, side of the nose, while the whole face, the chest, abdomen, backs of the hands, finger-tips (once), and the flexures, as the axillæ, groins, and popliteal spaces, are more rarely affected. The colour is usually black or sepia, but may be blue from azure to indigo; red, green, yellow, and violet sweats have been recorded, and in some cases, the colour has changed while under observation, as from blue to black, blue to ochreous, yellow to black. In Purdon's case, it was light blue on the back and once on the chest, and yellow on the abdomen and back of the neck occurring simultaneously. The blue secretion was preceded for twelve hours by a mouldy smell and a pricking sensation. The catamenia were reddish-green.

It appears either rapidly or gradually, forming a powdery or granular deposit on the skin, which is wiped off with some difficulty with water alone, but is easily removed with spirit of chloroform, ether, or glycerine. In four cases* I have seen,

* One of the cases, Kate L., is reported by Colcott Fox, in *Clin. Soc. Trans.*, vol. xvi., 1881. It was referred to a committee—S. Mackenzie, Cavafy, Fox, and myself—for investigation, and was admitted into U.C.H. The committee were convinced of its genuine character, on one occasion having seen a slight but decided renewal of the pigmentation while in a Turkish bath. The pigmentation formed slowly. The report of the committee, detailing the tests employed, is published in vol. xv. of the *Transactions*. Another case reported upon at the same time was clearly proved to be an imposition. I have since seen another case at Shadwell, a woman, æt. forty-seven, of naturally dark complexion; the bowels were habitually confined, going three or four days at least without an action, and latterly she had suffered from articular pains. The discoloration came out gradually, beginning at the sides of the face, then spread to the cheeks and forehead. When seen, the upper half of the forehead, the temporal regions, and the skin between the ear and malar eminence, were of a blackish-brown colour, with slight hyperæmia of the adjacent parts; she said it had been almost black, but she had cleaned some of it off. There was evidently much fat in the secretion, and there was seborrhœa of the scalp. Washing with soap and water had very little effect, but it was removed with ether; when the skin still looked darker and redder than the rest. After a week's treatment with saline purgatives the discoloration was much less, but she still had articular pains, for which alkalies were prescribed, and she did not attend again. A third case was a girl, æt. twenty, originally under Mackay of Brighton. The affection had lasted

it was largely composed of fat, and was flaky or granular, and much more resembled seborrhœa than sweating, and for these cases Wilson and Neligan's name, steorrhœa nigricans, is more suitable. In other cases, such as those of Lecat, Billard, Bousquet, and Elliotson, etc., it seems to have been indubitably sweat, for it was actually seen to be excreted under observation. So also was the case of a child, æt. ten years, in which blue sweat was secreted from the whole of the nose, except where there had been an excoriation which was apparently the exciting cause. Irregular crystals soluble in chloroform were obtained and Gecheline,* the reporter, thought it was indigo.

* * * * *

It would thus seem that there are two forms—the **sweat** and the **sebaceous**; and probably the first is that where it forms rapidly, and the last gradually. In Féréol's case,† neither sweat nor sebum was observable.

In a large number of cases, there is obstinate constipation. The amount of pigmentation varies on different days, or when it forms rapidly, at different times of the day. It is worse sometimes just before a catamenial period, and better just after it. It may go on for an indefinite period, if the disordered health is not rectified, coming out and disappearing somewhat capriciously, and return of the constipation is very likely to

a year, and was limited to the left cheek and eyebrow. Six months before the patch appeared, she had a superficial burn, which did not leave a distinct scar, but the surface was slightly granular. The deposit was distinctly fatty, evidently seborrhœic, and of a sepia tint. She suffered from obstinate constipation, the bowels only acting once a week. The left side flushed more than the right. In connection with this case, may be mentioned those of Conrade, who had a case of blue perspiration of one-half of the scrotum; and of White of Harvard, a case of unilateral yellow chromidrosis in a man, *Amer. Jour. of Cut. and Ven. Dis.*, vol. ii., November 10th, 1884. I have also had a case of yellow seborrhœa in a lady of eighteen, sent to me by Dr. Cook of Cardiff. No hysteria, no constipation was present, no cause was ascertained. There was a yellow, almost orange, fatty layer extending over the forehead, cheeks, and orbits, shading off gradually from above down. It could be cleaned off with ether, but with some difficulty. It took two days to reform sufficiently to be unsightly. The patient never ate butcher's meat. Scalp rather scurfy. Two months later there was no change, but in five months she was almost well.

* The patient was shown to the Medical Society of Odessa, and is reported in *Annales de Derm. et de Syph.*, vol. v. (1894), p. 718.

† *La France médicale*, August 20th, 1885.

induce a return of the disordered coloration. When checked in one place, it has appeared in other parts of the skin and in the excreta; in Teevan and Brodie's case,* there was black pigment in the vomit, fæces, and urine. Billard's, Law's, and Neligan's cases are other examples of similar occurrences, and in the case of Maker of Colmar the saliva also was sometimes blue. Blue pus, blue urine, green and red milk, have been observed on various occasions without chromidrosis.

Dubreuilh observed a case, a man of fifty-two, who had three attacks of red chromidrosis on the radial border of the thumb and metacarpal bone on each side, and afterwards on the bend of the wrist, and Sabrazé's and Cabannes's case was a man, æt. twenty-one, in whom red chromidrosis appeared after violent exercise, sometimes on the back of the right hand, sometimes on the left knee. They found a large quantity of indican in the urine. Barié's case,† a woman, æt. twenty-four, was yellow alternating on the two hands. The red sweat of the axillæ is a different affection.

Etiology.—Only eight out of forty-nine cases were in males, and although the ages have ranged from fifteen to fifty-seven, most (two-thirds) of them have been in young unmarried women. Uterine disorder has been present in many cases, but chronic constipation is the most frequent concomitant. The neurotic temperament is the greatest predisposing cause, and mental distress, hysteria, hypochondriasis, anxiety, grief, fright, have preceded or accompanied the attack in different instances.

Pathology.—The theory put forward is, that the substance secreted in the sweat is the colourless indican, which is oxidised by exposure to the air or by some ferment into indigo; the chief ground for this theory being, that in great meat eaters and in constipation and chronic catarrh of the intestine, which is so common in these cases, indican supposed to be derived from the indol of the fæces is more abundant in the urine than usual. The pigment in the case of Kate L. was in amorphous granules in the epithelium, and did not give the indigo reactions. Different opinions have been expressed as to the nature of the pigment, but all agree that it differs from any of the other mineral or vegetable powders of like colour. Primarily, the disease is

* *Medico-Chirurgical Trans.*, 1845, vol. xxviii.

† *Loc. cit.*, vol. x. (1889), p. 937.

doubtless a neurosis, and the clinical evidence points to the possibility of the pigment being excreted by either the sweat* or the sebaceous glands. In many of the cases, the secretion is too rapid for it to be of bacterial origin, but Stott † reports two cases, father and son, who had pink sweat which stained the shirt at the collar, wrists, and tails, but the axillæ were unaffected. He succeeded in cultivating a torula, which varied from pale pink to red according to the temperature of the tube, the lower the temperature the deeper the colour.

Diagnosis.—The possibility of imposition must always be borne in mind. The circumstances under which it occurs will often give a clue. There is nothing but imposture which at all resembles this affection, and this circumstance makes many people sceptical as to its genuine character; but the cases of Teevan, Duval, Foot, Fox, etc., in all of which competent witnesses saw it reappear, prove its reality.

Prognosis.—It ultimately always gets well, though it may last off and on for ten years. Kate L.'s case lasted five years at least, the other case two months. Its duration depends on the removability of the cause.

Treatment.—The successful treatment of the constipation, uterine derangement, or other defective health, is the only efficacious treatment; local remedies appear to have had no influence in most cases, but in my fourth case with yellow seborrhœa a resorcin and spirit lotion locally, and the administration of salol internally, appeared to be the remedial agents after five months.

COLOURED SWEATING, with quite a different pathology, has been also observed under the following circumstances:—

1. **Green Sweat**, due to copper, ‡ which has been taken into the system by the food, drink, or air, in particles or fumes, is seen mainly in copper workers. The colour may be bluish instead of green. In Kollman's case of blue chromidrosis, where the patient

* If Meissner's and Unna's view is correct, that the coil of the sweat gland secretes fat and the end of the duct sweat, disorder of the coil glands would account for the whole, and it would not be necessary to assume the involvement of the sebaceous glands.

† *Lancet*, February 15th, 1896, p. 413. In the following week magenta sweating in a man is recorded.

‡ A number of cases are recorded by Dr. Clapton, *Med. Times and Gaz.*, vol. i. (1868), p. 658.

had taken much iron, Scherer found protosulphate of iron in the sweat, and to this the colour was ascribed.

2. **Red Sweat** is often noted in the axillæ and genital region, due to micro-organisms,* which have developed in the hairs in these hot, moist parts, and have simply mingled with the sweat after its excretion; according to Babes,† these organisms resemble not only the red bacterium prodigiosum, but colourless growths of the hair and sweat. Red sweat is always associated with *leptothrix*, to which the reader is referred. Bacteria have also been observed in yellow (Eberth) and blue sweat.

Quite another kind, again, of red sweating is—

3. **Hæmatidrosis, or Bloody Sweat**, sometimes called ephidrosis cruenta.‡ It may be defined as a purpura of the sweat glands, blood having been extravasated into the coils and ducts, and appearing mixed with sweat on the surface of the unbroken skin, at the orifices of the ducts.

The affection is a very rare one, and in some of the cases has been due to vicarious menstruation, or it may occur in young women of highly nervous temperament during violent emotion, and occasionally in the new-born.§ It comes from limited areas, very diverse in different cases, *e.g.*, from face, ears, umbilicus, hands, feet, etc. Du Gard, quoted by Wilson, records a case, fatal on the sixth day, in a child of three months, where it came in large quantities from various parts of the body. The notorious case of Louise Lateau|| with “bleeding stigmata” was of this character in a highly hysterical subject, and there are like cases on record.

Nevins Hyde¶ reports a curious case in an emotional clergyman, but the *bona fides* of the patient was not above suspicion, but J. Dyer’s case** was in an attendant at a Turkish bath, and his

* Balzer and Barthélemy, *Ann. de Derm. et de Syph.*, June, 1884.

† *Centralblatt für med., Wissensch.*, 1882, p. 146.

‡ McCall Anderson, *Lect. on Clin. Med.* (London: 1877).

§ These and other hæmorrhages which occur in the new-born, *e.g.*, into the skin and alimentary canal, are probably due to the great changes which occur in the circulation after birth.

|| Warlomont, “Louise Lateau,” *Rapport méd.* (Paris and Bruxelles: 1875). “La stigmatisée de Bahia,” *Le Mouvement Méd.*, No. I., 1877, quoted by Duhring.

¶ *Amer. Jour. Cut. and Gen. Ur. Dis.*, December, 1897.

** *Medical News* (U.S.), June 22nd, 1895.

fellow-attendants had seen it appear and wiped it off; the skin was reddened before and after an attack, which lasted an hour.

The treatment would depend entirely on the cause; the hæmorrhage itself would rarely require special treatment, but if it did, it would be the same as for purpura hæmorrhagica.

PHOSPHORESCENT SWEAT

is a curious rarity. It has been observed in some cases of miliaria, and after eating phosphorescent fish, while Koster* records a case where the body linen became luminous after any violent exertion.† Phosphorescent breath in phthisis, in the pus of cancer, and in the urine and semen, when phosphorus is being taken as a medicine, are better known. There is strong reason for believing that the phosphorescence is due to bacilli, Beyerinck‡ having found no less than six species of photobacteria, chiefly derived from fish, which will excite fermentation in sugar solutions in the presence of oxygen and peptone.

URIDROSIS.§

Synonym.—Sudor urinosus.

This is due to excretion of urinary constituents, especially urea and chlorides, by the skin. Urea is a constant constituent of the sweat in small quantities, but in disease may increase so much that white crystals, like hoar frost, have been deposited on the body. This was possibly the nature of the deposit on the skin of four young natives in Hyderabad, recorded by Frazer-Nash, though no examination of the deposit was made. As he mentions having seen several other slight cases, it is probably not uncommon in India, where the food is principally milk, fruit, coarse bread, and water.

It has also been observed in cholera and atrophy of the kidneys, in uræmia, and in some conditions just before death,

* Quoted in Carpenter's *Physiology*, seventh edition, 1869, p. 500.

† See Sir Herbert Marsh on the evolution of light from the living human subject (Dublin: 1842).

‡ Supplement *Brit. Med. Jour.*, January 1st, 1891.

§ A case of Uræmic Uridrosis by Frederick Taylor, *Guy's Hospital Reports*, vol. xix. (1874), p. 405, refers to several other cases.

even where there has been no affection of the kidneys and bladder. A urinous odour of the sweat in uræmia is not uncommon.

ANIDROSIS.

Deriv.—*a*, privative, and *ἰδρώς*.

Definition.—A disorder of the sweat glands, in which their function is more or less in abeyance.

This condition exists in all grades, from slight diminution to complete absence, and may be local or universal. It may be symptomatic, as in diabetes, albuminuria, fevers, etc.; due to a congenital defect, as in xerodermia, though the absence of sebum is of quite as much importance in that disease, or in people who always perspire with difficulty even in a Turkish bath; or, again, it may be temporary or permanent from defective innervation, or torpor from general malnutrition, etc.; or, finally, it may be from mere clogging of the cutaneous orifices, from not washing sufficiently often. In many skin diseases, it is absent in the affected area, as in anæsthetic leprosy, sclerodermia, general or circumscribed (morphœa), in eczema or psoriasis, and in diseases in which the horny layer is increased, but it is very rare as an idiopathic disease. Whether congenital or acquired, when general it produces headache, painful flushing, etc., if the patient is exposed to great heat. Tändler's congenital case, in addition to these symptoms, had very little hair anywhere, never had had any lower teeth, and only two incisors and two molars on the upper jaw. He had no nipples nor sign of breasts. The skin was smooth and thin, and sections showed neither sweat glands nor hair follicles.

Treatment.—Nothing can be done for cases of congenital origin, but when acquired and apparently idiopathic, efforts at restoration should be made by a general tonic system, and shampooing after warm baths, especially alkaline and vapour, but not Turkish baths; cold sponging may be used in the morning, as part of the invigorating treatment.

MILIARIA.

Deriv.—*Milium*, millet.

Synonyms.—*Miliaria crystallina*; *Sudamina*; *Miliaria rubra*; *Miliaria alba*; *Lichen tropicus*; Prickly heat.

Definition.—An affection in which there is an obstruction to the sweat secretion, with or without inflammation as a cause or consequence.

Symptoms.—The non-inflammatory form is called *sudamina*, or *miliaria crystallina*. It is simply the result of the sweat being unable to escape, owing probably to an accumulation of epithelium at the orifice of the duct when the sweat function is in abeyance, as in fevers; then, when secretion is restored, especially by a "critical sweating," the fluid, being unable to escape by the natural channel, is effused under the horny layer, and forms a vesicle. The vesicles are very minute, closely crowded together, but rarely confluent, with clear or pearly contents with an acid or neutral reaction; the fluid is absorbed in a few days, leaving slight desquamation. The vesicles occur most abundantly on the trunk, especially the neck, chest, and abdomen, but they may come anywhere. They form rapidly, do not enlarge after the first few hours, and get well in a few days, unless fresh crops appear, which may keep up the affection for weeks.

Miliaria Vesiculosa et Rubra. This is an inflammation in the sweat-pore area, and the lesions may be simply acuminate, pin's-point-sized, bright red papules, or crowned with vesicles or pustules. They arise in great numbers, chiefly upon the trunk, especially on the back, but may also be distributed on the face and limbs. They are closely crowded, but discrete, though they are frequently in irregular groups of three to six, and the fluid being inflammatory, is of alkaline reaction. There may be a general redness of the skin in the affected area. When there are only bright red papules, it is *miliaria rubra*; when there are vesicles, the fluid soon becomes opaque, and it is *miliaria alba*. In a few days, the contents dry up and leave slight desquamation; or if ruptured by scratching—for they do not rupture spontaneously—a small scab or dried exudation is left, which falls off in two or three days, and the process is at an end as far as those lesions

are concerned, though by successive crops the eruption may continue as long as the hot weather lasts. Pricking or itching is often present, but not so much as in *miliaria papulosa*.

The "red gum"* or *strophulus* of infants is really a sweat rash in small groups of *miliaria rubra*, due to the infant's being too much swathed up; it is often unilateral, on the side of the face and arm which is held to the mother in nursing, when she suckles mainly with one breast.

I have seen a precisely similar rash in a man; it affected the trunk chiefly, which was thickly covered with small groups of papules or papulo-vesicles. He had had it ten years, and it came out either in hot weather or when he got hot at his work. Small doses of arsenic controlled it, but did not cure it. In another man, the eruption was of the same kind, but he had been in the tropics.

Miliaria Palmæ et Plantæ. In rare instances, minute vesico-pustules form at the sweat orifices of the palms, dry into horny plaques, and shell off, leaving a depression with scaly collar. This may go on for years if not treated. I have also seen it in an acute form on the soles of an infant.

Miliaria Papulosa, another variety of *M. rubra*, is the well-known lichen tropicus, or prickly heat, the presence of papules being its only title to the name of lichen.

It differs from *M. vesiculosa* in the inflammation being secondary to the retention of the sweat in that disease, while in *M. papulosa*, the inflammation produces the obstruction to the sweat secretion.

It consists of minute, bright red, acuminate, discrete papules, closely crowded together, with vesicles or vesico-pustules sparsely interspersed. It comes out suddenly, preceded and accompanied by profuse sweating in other parts, and is attended with intolerable pricking and tingling. It affects large areas, chiefly in covered parts, such as the limbs, breast, flanks, and upper part of the forehead; the last position is the most common in my experience, but in the tropics, and in people who have had it before, it may come anywhere.

Miliary fever † (*Synonym.*—Sweating sickness) is an epidemic

* Author's Atlas, plate xlii., fig. 2. *Sydenham Society's Atlas*, plate xxxiv.

† For a further account of it, see Ziemssen's *Encyclopædia*, 1875, vol. ii.,

disease in which profuse sweating and miliaria are prominent symptoms. The first record of it was a severe epidemic in London in 1485; of late years, it has been almost confined to the north of France.

Etiology.—Sudamina are most frequently seen at the termination of a fever, such as typhus, typhoid, acute rheumatism, puerperal septicæmia, or in some prostrating constitutional condition, such as tuberculosis. It occurs at all ages when the vital powers are depressed, though the depression has only an indirect effect by producing an excess of sweat beyond the excretory capacity of the ducts.

M. vesiculosa occurs under much the same conditions, but is more readily re-excited by injudicious eating, hot drinks, or acrid sweat and too warm clothing, as in delicate infants, and possibly by chills when the skin is excited by the previous conditions.

M. papulosa is most common and most highly developed in hot climates, but is not unusual in England in the summer, though it is rarely intense here, unless the patient has had previous attacks abroad, for one attack strongly disposes to another, and very slight causes will reproduce it in the predisposed; too warm or close-fitting clothing, or the irritation of flannel, are some of many exciting causes, as are also rapid alternations of temperature, whether from cold to hot, or from hot to cold; hence, therefore, too thin clothing may also conduce to it. It is most frequently seen in obese people, or in those who perspire profusely.

Anatomy.—The pathology has been sufficiently explained; the anatomy of sudamina has been investigated by Haight, Robinson, and Pollitzer, of New York,* Coats of Glasgow, and Török. The vesicle is formed between the deeper lamellæ of the corneous layer; the fluid in it is sweat, and a sweat duct is always to be found beneath the vesicle; the duct being obstructed, the sweat ruptures it, and is effused as described. Coats says that it is more than mere obstruction. There is inflammatory irritation of the sweat glands and ducts, and that it is leucocytic immigration which

p. 485, and *Lancet*, October 1st, 1887, p. 671, giving the symptoms of an epidemic in the central departments of France in the spring of 1887; also *Plagues Ancient and Modern; or, the Black Death and the Sweating Sickness*, by Joseph Frank Payne, M.D. Also Kaposi-Besnier, vol. i., p. 165.

* "Miliaria and Sudamina," *Amer. Jour. Cut. and Ven. Dis.*, vol. ii., p. 362, "Prickly Heat," etc., Pollitzer, *loc. cit.*, vol. xi., p. 50, February, 1893. "The Miliaria Group," Pollitzer, *New York Med. Jour.*, January 6th, 1894. "The Pathology of Sudamina and Miliaria," Coats, *Jour. Path. and Bacteriology*, October, 1892. *Abs. Brit. Jour. Derm.*, vol. v. (1893), p. 221.

plugs the twisted part of the duct, and the epithelial cells are stretched and dissociated and a cavity is formed. In a case of acute rheumatism he found diplococci.

The fluid from a severe case of sudamina in typhoid fever was examined by Robinson, who found eighteen parts per thousand solid, fourteen organic and four inorganic matter, chiefly chlorides. No uric acid, sulphates, phosphates, albumen, or sugar.

In *M. vesiculosa* and *papulosa*, slight inflammatory exudation doubtless occurs about the ducts, and in *M. vesiculosa*, the inflammatory fluid is effused more freely than in *M. papulosa*.

Robinson and Török have both examined *M. rubra*. Robinson says that the inflammation is about the sweat pore, Török that it has nothing to do with it. As they are both good observers, we must assume that it is not always round the sweat pore, and in this Pollitzer agrees; though in the majority of cases, it is connected with the sweat duct, he says all agree that the lesion is due to inflammation starting in the papillæ, and Robinson often observed a catarrhal condition of the sweat coil. On the whole, the evidence goes to show that the process is a sweat inflammation, and the vesicles are situated in the prickle cell layer.

Pollitzer accounts for the obstruction of the flow of sweat in prickly heat by a theory of the cells of the epidermis swelling by imbibition from the excessive sweat owing to white skins being less oily than dark skins, and suggests oil inunctions after bathing, like the old Romans, as a preventive measure.

Diagnosis.—The minute pearly vesicles of sudamina can scarcely be mistaken for anything else.

M. vesiculosa is most like *vesicular eczema*, but in the latter, there is a tendency to form patches, and the vesicles rupture spontaneously, while in miliaria, the lesions are scattered irregularly, or the groups are very small and the vesicles do not rupture of themselves, and while each is on a red base, the surface is not red, as in eczema. Miliaria is more transitory, coming in sudden repeated crops; eczema is a more continuous process.

M. papulosa is most like *papular eczema*; its association with sweating, the sudden onset, and perhaps equally sudden decline, its occurrence only in hot weather, the peculiar pricking sensation, and the minute size of the papules, scarcely allow of a mistake.

In children, these sweat rashes often suggest an exanthem; their localisation to hot situations, the accompanying sweating, and the absence of the constitutional symptoms of measles, scarlatina, and rōtheln, etc., will generally guide aright; but when sudamina occur with scarlatina such criteria fail, and the knowledge of the possibility of such a conjunction is all there is to afford a clue.

Prognosis.—In temperate climates, it generally yields readily to appropriate treatment. In hot climates, it may pass on into an eczema, or intertrigo in fat persons. Relapses are common, sometimes every summer.

Treatment.—Sudamina require no treatment. In the inflammatory forms, saline diuretics, such as the acetate and nitrate of potash, are the best remedies. In prickly heat, much the same treatment is required; at the same time, search must be made for exciting causes, and rest, light clothing, and simple diet must be enjoined; these precautions, with saline aperients, and lemon or lime juice drinks, soon give relief. To avoid future attacks, care should be taken to prevent exposure to rapid alternations of temperature, especially chills, and woollen materials are therefore preferable to cotton for underclothing. Locally, calamine lotion, a weak lactate or acetate of lead, or a very weak liquor carbonis detergens lotion (Lotions, F. 1, 3, 38, 39, 41), may be employed. Alkaline and bran baths at a temperature of 90° to 95° Fahr. often give relief. Zinc and starch dusting powders or finely powdered boric acid and starch are also useful. One of these applications should be applied whenever the irritation is great, so as to obviate scratching, which always aggravates the eruption.

Cribriform pitting, or *Sudamina atrophica* (?) I have seen three cases of this rare and undescribed eruption. The first was a lady,* æt. nineteen, in whom minute vesicles not quite superficial, as except with a lens they looked like normal coloured papules, had appeared for a month past in groups of from three to six, and after lasting a day disappeared, and left minute depressions like atrophic pits or lines. They were situated on the cheeks and sides of the nose.

In a girl, æt. thirteen, the affection had lasted two years and was worse in the summer. All over the cheeks there was redness from minute telangiectic vessels, also minute vesicles situated in the centre of the tufts of the vessels which left tiny scar-like depressions.

In another girl of the same age there was an even more marked condition of telangiectases and atrophic pin's-head pitting all over the cheeks, which had a cribriform aspect, but there were

* B. 188, Private Notes.

no vesicles while she was under observation. Some of the pits near the orbit were surrounded by healthy skin. The disease had commenced a year before in a patch on the left cheek.

A fourth case was probably an allied condition, but there was neither telangiectasis nor scarring. She was a young lady,* æt. thirteen, who had had the disease four or five years. It was confined to the eyebrows and a large patch on each side of the face, and these areas were crowded with minute pin's-point vesicles, which collapsed on pricking. In the summer, and when she was hot, there was redness of the affected area.

The presence of pitting shows that the vesicles were not epidermic in origin, and that they were probably situated in the papillary layer, but I have not been able to follow the cases up and ascertain whether the pitting was permanent, probably not. The condition appears to be something intermediate between sudamina and hidrocystoma, but no histological observations could be made.

C. Fox † exhibited a similar case, in a girl of thirteen years, affecting the greater portion of the cheeks. There were no telangiectases and no comedones. With a lens minute conical hyperæmic papules were discernible. After observing the case for some months he came to the conclusion that the "process was folliculitis with subsequent atrophy." Galloway ‡ showed another case, a woman, æt. twenty-six. It came on five years previously, after exposure to severe cold, and affected the whole face, ears, and front of the neck. There was minute pitting, general erythema, and minute telangiectasis. He thought the sweat apparatus was involved.

HIDROCYSTOMA. §

Synonyms.—Dysidrosis of the face (G. J. Jackson and Rosenthal).

Definition.—A non-inflammatory eruption, limited to the face, consisting of deep-seated vesicles formed in the sweat apparatus.

The disease consists of deep-seated non-inflammatory vesicles, and was first described in 1884, by Robinson of New York,

* C. P., 108, Private Notes.

† C. Fox, *Brit. Jour. Derm.*, vol. viii. (1896), p. 220.

‡ Galloway, *loc. cit.*, vol. xiv. (1902), p. 168.

§ *Literature.*—*Jour. of Cut. and Gen. Ur. Dis.*, vol. ii. (1884), p. 362, and

where it appears to be fairly common, while in England it is rare, but in the west of Scotland, Adam saw nine cases.

It is limited to the face, chiefly above the level of the mouth, especially on the nose and adjacent part of the cheeks, and in the middle of the forehead. The lesions are tense, clear, shiny, deep-seated, whitish vesicles, but they may be solid-looking, and the larger ones project considerably. Sometimes there is slight itching, but no sign of inflammation in or about them, the intervening skin being quite normal. They have been compared to boiled sago grains when small, while the larger ones are dark bluish at the periphery, Robinson says, but in a case of mine some of them were dark in the centre like a comedo; the rest were translucent, or of the colour of the normal skin. Rosenthal compared them to milium, but this seems correct only for the declining stage. They are discrete for the most part, but above the naso-labial folds are sometimes so crowded as to touch, but do not coalesce, and they have no special arrangement. The majority are from a pin's head to a hemp seed in size, but some are as large as a pea. When pricked a clear acid fluid escapes, and the vesicle collapses, but they do not rupture spontaneously, the contents being slowly absorbed. The vesicles develop most in the summer, and decline to nearly vanishing point in the winter, but seldom go away entirely; in Morton's and Hallopeau's cases, the vesicles became more prominent at the monthly periods. The disease may recur year after year for many years. Middle-aged women who are exposed to heat in their occupations over the fire or wash-tub are the most frequent victims, but a patient of mine was a man of forty in good circumstances, and Robinson had a case in a man of twenty-eight. Unilateral cases with unilateral sweating have been several times observed, or the disease may be limited to the nose, with or without including the inter-orbital space.

Diagnosis.—The eruption presents few difficulties in diagnosis. Its limitation to the face, the persistent vesicles being deeply

August, 1893, coloured plate. "Dysidrosis," G. T. Jackson, *loc. cit.*, vol. iv. (1886), coloured plate. "Dysidrosis," Rosenthal, *Deutsch. med. Wochens.*, No. 20, 1887. "Hidrocystoma," James Adam, *Brit. Jour. Derm.*, vol. vii. (1895), p. 169, with histology plates. "Miliaria Profunda," Pollitzer on the Miliaria group, *N.Y. Med. Jour.*, January 6th, 1894, histological. "Hidrocystoma," G. Thibierge, *Annales de Derm. et de Syph.*, November, 1895; Abs. *Brit. Jour. Derm.*, vol. viii. (1896), p. 146.

seated in the cutis, with acid contents and absence of all sign of inflammation, are characteristic, and distinguish it from the superficial, widespread, and transitory sudamina; from pompholyx, which is a disease of the extremities; from the obviously inflammatory eczema; and from all solid miliary lesions of the face, such as adenoma sebaceum, acanthoma, adenoma cysticum, etc.

Anatomy.—Robinson found that the vesicles arose from dilatation of the excretory duct of the sweat glands in the deep part of the corium, but argues that it is not a mere retention cyst, as the wall is always lined with cells derived from proliferation of the duct epithelium and the lesion in some respects is suggestive of a new growth. Pollitzer's and Adam's observations confirm Robinson's anatomical facts, but Pollitzer regards them as retention cysts, while Adam considers that the coil is involved rather than the duct; the secreting part being hypertrophied, and the duct being not large enough to discharge the increased secretion, dilatation behind it occurs.

Treatment.—The best treatment is to puncture the vesicles. Rosenthal found a two per cent. solution of naphthol in spirit beneficial. The result is palliative rather than curative.

TUMOURS OF THE SWEAT GLANDS.*

The tumours arising from, or in connection with, the sweat glands are of pathological rather than clinical interest, as it is impossible to diagnose them in the present state of our knowledge without excision and histological examination. Only sufficient references can be given here to enable the student to follow up the subject. Some cases of rodent ulcer have apparently been traced to a sweat gland origin. In my case of Paget's disease of the scrotum there were certainly sweat gland changes of a cancerous character, but whether primary or secondary it was not possible to determine, and cancerous developments from these glands have been found by other authors, such as Fordyce, Darier, etc.

* *Literature.*—Unna's *Histopathology*, pp. 699, 710, 806-814, abstracts and references to many cases. Fordyce, "Adeno-Carcinoma of the Coil Glands," *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. xiii. (1895), p. 41, with many references to date. "Næviform Sudoriparous Tumours," Villard and Paviot, Second French Congress of Internat. Medicine at Bordeaux in August, 1895. *Sem. méd.*, 1895, No. 42. Audry, "Fibrome periacineux des glandes sudoripares," *Jour. Mal. Cut.*, vol. vii. (1895), p. 650. Morisani, *Adenoma sudoriparum*, Naples, 1887, gives many references to old cases. Audry excised a cyst from the back of the ring finger of a man of sixty, and found it full of gelatinous contents, and thought from the histology that it was in all probability of sweat duct origin, *Annales de Derm., etc.*, vol. i (1900), p. 123.

Petersen, Elliot, Villard and Paviot have shown that some cases which look like *nævus verrucosus unius lateralis* are really of sweat gland origin; and *nævus corné* of the sweat gland orifices, such as have been described by Hallopeau, Besnier, and Respighi, are probably of the same character. Betham Robinson at the Pathological Society, 1898, showed a sudoriparous cyst from the axilla one and a half inches across.

B. DISEASES OF THE SEBACEOUS GLANDS.

SEBORRHŒA.

Deriv.—*Sebum*, or *sebum*, suet, and *πέω*, to flow.

Synonyms.—Sebaceous flux; Stearrhœa; Steatorrhœa; Seborrhagia; Fluxus sebaceus; Acne sebacea; Pityriasis; Ichthyosis sebacea; Tinea amiantacea; Tinea asbestina; Eczema seborrhoicum (Unna); *Fr.*, Acné sébacée; *Ger.*, Schmeerfluss; Gneis.

Definition.—A disorder of the fat glands, producing increase and alteration of the secretion, which forms an oily, waxy, or scaly accumulation on the surface.

Symptoms.—Seborrhœa may be general or local in its distribution, and in one or other of its forms is a common condition, especially in the regions where oil is normally most abundant, viz., the scalp, the upper and central parts of the face, the front of the sternum, the interscapular region, the pubes, and inguinal regions.

Since there is so much that is debatable in the nature and origin of the morbid forms included under this title, the clinical features will be set forth,—first, of those varieties in which there are no external signs of inflammation, and, secondly, of those in which the inflammatory phenomena are more or less manifest.

In the first series is included an oily, a waxy, and a scaly form, although the last two are mixed conditions.

Seborrhœa Oleosa [*Synonyms.*—Fluxus sebaceus; *Fr.*, Acné sébacée huileuse (Besnier); Hyperidrose huileuse (Brocq); Acné sébacée fluente (older writers)]. In this affection, which is a common one at puberty and onwards, and varies greatly in degree, the skin feels and looks greasy and shining, and a thin oily secretion is spread over the surface. Its most common position

is on the face, especially the forehead, cheeks, and nose, and then the complexion is generally thick and muddy, and, owing to dust, etc., adhering so readily, the skin always looks dirty, and acne vulgaris is a usual concomitant. On the nose, it is often associated with venous congestion, rendering it a deep red, but cool to the touch, while the openings of the follicles are unusually prominent, and filled with soft fatty easily expressed plugs, or covered with a dirty, fine, slightly adherent scale.

On the scalp, which is almost always also affected, it does not attract much attention, except in bald persons, to whose heads it imparts an extra polish.

It may also be seen on the trunk, especially the back, generally with acne vulgaris and comedones.

According to Unna, the secretion is derived from the coil of the sweat glands, and not from the sebaceous glands, and this is the only affection he considers entitled to the name of seborrhœa.

Wallace Beatty * urges many cogent facts in favour of the old view as to the origin of the secretion, but finds traces of an inflammatory process. Robinson of New York also argues in favour of the old view. At the same time no one disputes that there is a certain amount of fat in sweat, which in the new-born is much in evidence, while the sebaceous glands are small and inactive. Leslie Roberts proposes the term oleorrhœa for excessive oily secretion from the sweat coils.

Seborrhœa Sicca is generally made to include the waxy and the scaly forms, as they may be associated or shade off into each other. They are both very common and important, as they are the chief causes of premature baldness.

The waxy form (*S. cerea*) varies much, according to its degree and position, and the age at which it occurs. In the new-born, it is the vernix caseosa, and though varying in quantity, is physiological rather than pathological. Whether of coil or sebaceous gland origin is still disputed.

In the first year of life, sebum is normally abundant, and, mainly

* *Brit. Jour. Derm.*, vol. vi. (1894), p. 161, a good review of the pros and cons. of Unna's views, with original observations. Unna's *Histopathology of the Skin* should also be referred to. See also Seborrhœa discussion opened by Colcott Fox, *Brit. Med. Jour.*, vol. ii. (1901), p. 855; also at Manchester meeting of B.M.A., 1902.

from insufficient washing, often accumulates on the scalp, chiefly at the vertex, where it forms a dirty-yellow mass, sometimes of considerable thickness and cheesy consistence; when raised up, the skin beneath is pale and healthy, unless it is irritated by decomposition of the fat, when it may set up an eczema—a not infrequent event; otherwise it can scarcely be said to transgress the physiological limit. The origin of this fatty deposit is also

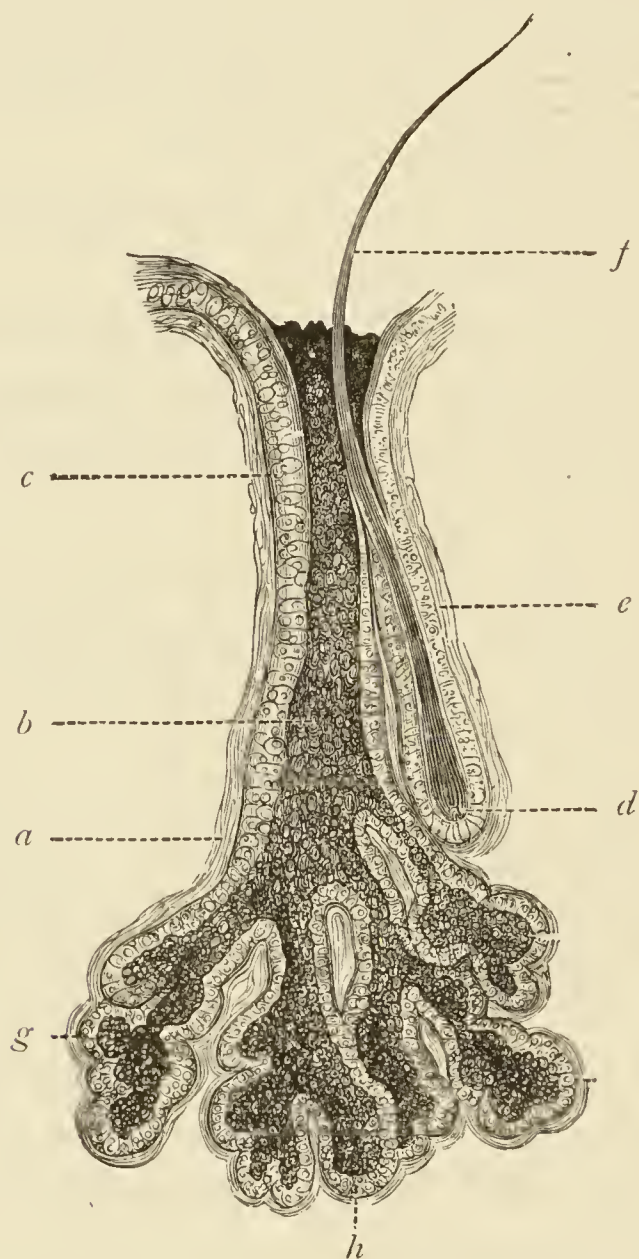


Fig. 66.—A NORMAL SEBACEOUS GLAND, in connection with a lanugo hair (Neumann).

a, connective tissue capsule; *b*, fatty secretion; *c*, *h*, fat-secreting cells; *d*, root of a lanugo hair; *e*, hair sac; *f*, hair shaft; *g*, acini of sebaceous gland. A sebaceous gland in connection with an ordinary hair may be seen at the beginning of the section on diseases of the hair.

said by Unna and others to be not of really sebaceous origin, but there are many who hold that it is.

The same may be said of the fatty secretion called smegma, which may accumulate on the glans penis under a long prepuce, and in women on the clitoris or labia where proper ablutions

are not practised. Here also its decomposition is liable to set up inflammation, and produce balanitis or vulvitis.

At puberty and onwards, it is seen most commonly at its highest development upon the scalp, where it forms dirty-looking yellowish or greenish-brown, or even black plates or crusts of fat and epithelium. Its most common appearance is that of soft yellow wax. When in small quantity or in the early stage, it can be seen that these fatty scales are seated at the hair follicles of the vertex, temples, and adjacent parts—and on removal of the secretion a funnel-shaped depression may often be seen round the hair.* The disease is then more serious than it appears, as it leads to atrophy of the hair, and if not perseveringly treated, to premature and permanent baldness, of which it is the most common cause. This it may do, when it is insufficient of itself to attract the patient's attention, for in cleanly people it is easily overlooked, and the loss of hair is the condition for which advice is sought. In more severe cases, it may extend all over the scalp, and form a fringe from one-half to an inch wide all round, with well-defined margin and fatty scales; more or less obvious inflammation is then generally present. It may also occur on the hairy parts of the face, where it also leads to loss of hair. In girls, it may be seen on the eyebrows, with very slight redness and scaliness, but with gradual shedding of the hair. It may be associated with some defect in the general health, and is very difficult to cure completely.

In the milder cases, the scaly element is more pronounced, and the fatty characters not obvious until the surface of the scalp is gently scraped. Again, sometimes the secretion is more oily than waxy, and the patient complains that the hair is always moist as well as being abnormally shed.

The scaly form (*S. furfuracea seu pityriasiformis*) used to be, and is still, regarded by some authors as a separate affection, and has been also called pityriasis simplex, acné sébacée sèche, eczema seborrhoicum squamosum (Unna), dandriff, etc. Many persons are troubled by their heads being constantly covered with

* In a young man at U.C.H. there was a general and extensive thinning of the hair with marked infundibulation round the hair and very little seborrhœa, but in parts there were fatty plugs which could be expressed like a comedo. In many hairs, the medulla was interrupted, but in most it was quite absent.

fine, white, shining scales, which brush or shake out on to their clothes, to their great annoyance. Examination of the scalp shows that it is more or less thickly covered with these scales in the same positions as the waxy form, and the lower layers are slightly adherent to the scalp. This condition is familiarly known as **scurf**, or **dandriff**, and generally leads to atrophy of the hair, which becomes dry, brittle, lustreless, and sometimes grey, and falls out or is easily combed out every day (**alopecia pityrodes** of Pincus), but in some cases, the hair is abundant, though often grey or white. The scalp beneath the scales is generally quite white, but there may be considerable hyperæmia, burning, or itching. It may, however, last for years without any external sign of inflammation. A similar condition occurs on the whiskers and beard, but less frequently.

On the face, generally from the irritation of soap, patches with small scales of white tint with or without slight subjacent hyperæmia, are frequent in children; the patches are rather well defined, extend peripherally, but in irregular shapes, especially when several are confluent. Whitfield found a micrococcus, which did not liquefy gelatine, invariably present. In strumous children, it may be pretty general on the trunk and limbs in small shining scales, and it is very often present along with lichen scrofulosus.

In the aged, with degenerated skins, dirty-looking branny or powdery scales may cover the whole body to a greater or less degree, and a similar condition occurs sometimes in diabetes and other chronic wasting diseases (**S. tabescentium**). The most modern view is not to regard these conditions as really seborrhœic.

Under the name of **Alopecia Pityrodes Universalis**, P. Michelson describes* a rapid and general denudation of hair occurring in debilitated states, which differs from alopecia areata universalis neurotica in being preceded by abundant desquamation of fatty scales; in the apparently bald places, being covered with fine colourless lanugo hairs, or with hair rudiments; and instead of the skin being thin and lax, as in alopecia areata, being rather firmer and stiffer than normal. Moreover, the prognosis is good. Besides general tonic measures, Michelson recommends local ablution with spirituous soaps or weak solutions of corrosive sublimate or chloral hydrate. It appears to me to correspond

* *Monatsh. f. prak. Derm.*, 1882, No. 4, and Ziemssen, p. 418.

with *S. sicca* except in the rapidity and extent of the denudation of the hair, and in cases which I have seen there has always been some degree of visible inflammation present.

S. congestiva is the name given by Hebra to what is now known to be the early stage of lupus erythematosus.

S. corporis of Duhring will be presently described.

Etiology.—Excluding the infantile form, which hardly amounts to disease, it is particularly common at puberty, when all the glands become especially active. It is more common in women than in men after fifty, but, taking all ages, there is no material difference; fair people are more prone to *S. sicca*, and dark to *S. oleosa*. It appears to run in families sometimes; or, at all events, it is not uncommon to find that all the men of a family lose their hair prematurely, and seborrhœa is generally present in such cases.

It is a much more obstinate disease in the old than in the young, and also more important, on account of the baldness it entails. In many cases, there is some defect of health, generally of a debilitating character. In girls, chlorosis is one such cause, and even young men suffering from seborrhœa are sometimes pallid and out of health, and may be the subjects of struma, comedones, and acne vulgaris. After the climacteric period, women are especially liable to it, frequently without any uterine disorder being present. It is said to be more common in those who sweat readily, but I have known many instances in which luxuriant hair and heavy sweating have been associated. Syphilis also is a strongly predisposing influence in both sexes, and other chronic exhausting diseases, such as phthisis and chronic cancer, are responsible for a certain number. A more transitory condition is often seen after severe illnesses, such as the exanthemata and other fevers, with considerable loss of hair. Small-pox especially is apt to give rise to scutiform, closely adherent crusts on the face, either broken up, or in a continuous patch. Finally, in a large number of cases no cause whatever can be assigned for it, the patients being in robust health, and one can only assume a tissue proclivity which offers a favourable soil for the seborrhœic micro-organism.

Pathology.—Although Henle and Meissner long ago had stated that the sweat glands secreted fat as well as water, Hebra's views were generally accepted:—that all the conditions just

described were the outcome of seborrhœa ; that this was primarily an exaltation of the natural function of the sebaceous glands ; that the difference in consistence depended mainly on the idiosyncrasy of the individual, on the admixture of scales from the more or less free exfoliation of the cells of the hair follicles and epidermis, and from imperfect fatty metamorphosis of the lining cells of the sebaceous glands. This comfortable and plausible explanation was rudely shaken by Unna in 1881 and 1894, who claimed the most important *rôle* as lubricators of the skin for the coil glands, the secretion being chiefly oleic acid, whilst that of the sebaceous glands was chiefly stearic acid. Much can and has been said both for and against this view of Unna's, and while no one disputes that oil is formed in the sweat coils, its amount* and relative importance is still a matter of active controversy. Unna also advocated the view, which is pretty generally accepted, that, while seborrhœa oleosa and the vernix caseosa are the only conditions of mere excessive secretion, the firmer kinds are really of inflammatory origin, "a dry catarrh of the skin, in fact," mixed with fat, while the clinical signs of inflammation may be wanting. The sebaceous glands are very little altered at first, but ultimately there is an obstruction to the issue of fat, and a consequent arrest of secretion, the lobules being full of fatty cells, but not of undegenerated epithelium. Unna confirmed the statement of Pincus, Piffard, and Van Harlingen, that the scales of seborrhœa sicca are produced, not from the sebaceous glands, but from the horny epidermis ; and Sabouraud says that they have a peculiar and specific cause, a grey-coloured coccus and the "bottle bacillus." This scaliness is not necessarily, though generally, mixed with seborrhœa. For Sabouraud there are two forms of seborrhœa, viz., seborrhœa oleosa and the comedo, which is a cystic transformation of a primitive seborrhœic plug ; but while Unna regards seborrhœa oleosa as of sweat coil origin, Sabouraud says that it is a hypersecretion of the sebaceous glands due to the seborrhœic micro-bacillus.

Whilst not disputing that the microscope reveals signs of a very slight degree of inflammation, clinically there is usually no evidence of it, and after removing the fatty crusts the skin looks quite white and normal. Clinically, therefore, it is convenient to use the old nomenclature for these affections with fatty deposition

* Kreidl says that there is one per cent. of fatty acids.

on the skin without external signs of inflammation, and to describe the definitely inflammatory forms separately.

While for Unna, the "morococcus" he has found is the cause of both the apparently non-inflammatory and the obviously inflammatory conditions, Sabouraud regards the seborrhœic micro-bacillus as the cause of the true seborrhœa, while various forms of inflammation are excited by the addition of other microbes, *e.g.*, staphylococcus aureus, or a grey-cultured coccus; hence on the seborrhœic basis arise acne necrotica varioliformis, acneic furunculosis, chronic furunculosis of the neck, sycosis and acne keloid. Whilst the chief points of controversy are set forth, it must be left to future workers to show which views are correct.

Diagnosis.—In the absence of secondary inflammation, the diagnosis is not difficult.

S. sicca is most like *eczema*, but the crusts are fatty, and do not consist of inflammatory exudation, and when raised, the skin beneath is white and dry, while in *eczema* it is red and moist. In scaly seborrhœa, hyperæmia is either absent or slight, the itching is comparatively little and often absent, the pityriasis is diffused over the scalp, and is always dry throughout its whole course; in *eczema*, the redness is always well marked, there is generally discharge, marked infiltration, and itching, and it is often only partial in its distribution.

This form is also like *psoriasis*, but *psoriasis* is always in well-defined patches, the scales are adherent, very abundant, and larger than those of seborrhœa, and, when removed, the surface below is very red, and the disease is seldom limited to the scalp.

Seborrhœa of the face, with hyperæmia, is very like a *slight eczema*; here, again, there is never any discharge, the scales are evidently chiefly fatty, and there are often other signs of sebaceous disorder.

The diagnosis between seborrhœa of the face and *lupus erythematosus* is given under the latter disease.

Prognosis.—In infants and young people the prognosis is good, but when of long standing, it is always obstinate, and may be incurable, but it can always be temporarily benefited and be kept under by applications once or twice a week. On the scalp, even in the comparatively young, if of long standing, it is often fatal to the hair of the affected region, restoration rarely occurring, and then being only partial; but in recent cases, there is fair hope of success.

Treatment.—The indications for internal treatment are to be sought in the etiology ; the defects in health should be carefully looked for, corrected, and every effort should be made to place the patient under the best conditions as regards himself and surroundings that circumstances permit. Iron and cod-liver oil are the two remedies of most frequent utility, but the alimentary canal often requires preliminary attention. Arsenic is sometimes useful in the scaly cases. Duhring speaks in favour of sulphur, especially in the form of calcium sulphide, one-fifth of a grain three times a day ; but treatment on general principles is more reliable than specifics, which only find a place when the special indications are absent.

It must, however, be acknowledged that internal medication only plays a subordinate part in the removal of the disorder, and its microbial pathology explains what practical experience has proved, viz., that :—

Local treatment is of the greatest importance. In infants, all that is required is that the fat crusts should be softened with strips of flannel dipped in olive oil and laid on the scalp, or the oil may be well rubbed in, and the head washed thoroughly with soap and water ; a little oleate or oxide of zinc ointment may be afterwards applied for a few days.

In older people, or where the crusts are very adherent on the scalp, the soap and spirit liniment will facilitate removal of the crusts and scales, and the addition of oil of cade, or the less disagreeable thymol, gr. xv in one ounce of the liniment, increases its efficacy. This would be used about once a fortnight as a preparation for other remedies, which for the scalp will be set forth under *Seborrhœic Alopecia*.

Seborrhœa nasi is often very troublesome, and produces much distress of mind to the young people who are most subject to it. If it is simply oily, a thorough washing with soap and water and then rubbing on a powder of sulphur præcipitatum ʒi, emol keleet or cimolite ʒix, is often efficacious.

If there are fatty plugs, whether soft or hard, these should be expressed with the blunt side of a curette or with the thumb-nails, and the stronger antiseptic and spirit soap liniment should be rubbed on with flannel dipped in hot water, then rinsed off, and the same powder applied, or a calamine lotion with hydrarg.

perchlor. gr. $\frac{1}{4}$ to the ʒj or sulph. præcip. gr. iij to the ʒj painted on and allowed to dry.

Judgment must be exercised so as not to use the spirit soap too frequently and thus inflame the skin. In both these forms, disorders of the alimentary canal are frequently present and must be attended to. Where the face is generally affected similar treatment may be employed, but probably less vigorously. Where there is only slight hyperæmia, precipitated sulphur, more or less diluted with starch and oxide of zinc, may be scented with attar of rose and used with a powder puff; for the body ten to thirty grains of sulphur to an ounce of lanolin is all that is required, sometimes ʒj to the ʒj may be employed. Whatever the treatment adopted, it should be energetically and perseveringly pursued.

SEBORRHŒIDES.

This is a convenient term used by French writers for the various inflammatory eruptions which arise in connection with seborrhœa, and is the analogue of syphilides, tuberculides, etc. It must not, however, be considered as proved that because seborrhœa is an antecedent and concomitant of these forms of dermatitis that the seborrhœic bacillus is the direct cause of them. It is highly probable that seborrhœa only offers a specially favourable soil for the cultivation of various other organisms. As an example of how this may come about, *vide* Sabouraud's views as set forth in Alopecia Seborrhoica.

Seborrhœic Dermatitis [*Synonym.*—Seborrhoic eczema (Unna)] comprises various forms of the second series in which the clinical signs of inflammation are present, and resemble more or less closely various forms of ordinary dermatitis.

Duhring was the first to point out that a certain form of inflammation of the skin, which had long been known under the name of lichen circinatus and other synonyms, was intimately associated with seborrhœa capitis, and was, he considered, the same disease modified by position, and he called it therefore seborrhœa corporis. Unna, from a careful study of S. capitis by the microscope and of the clinical relations of the disease, came to the conclusion that not only was S. capitis an inflammation of the skin, seated chiefly in the coil glands rather than the sebaceous glands, but that the

various forms of dermatitis which are met with in regions where the coil glands are abundant, such as the axillæ, groins, interscapular regions, and even the palms and soles, are not only of the same nature as *S. capitis*, but are in most, if not in all, instances due to the direct transference of the same pathogenic organism from the head to the region affected, and that in its new abode, the irritative presence of the parasite excites dermatitis of various forms, which he would embrace in one large group, viz., seborrhœic eczema.

There can be no doubt that much credit is due to Unna for an important generalisation ; but the majority of dermatologists, except his most faithful disciples, consider that he is giving to his seborrhœic eczema too extended a meaning, which dermatology will be a loser rather than a gainer by adopting unreservedly.

Without disputing that there may be a microscopical amount of inflammation in all *S. capitis*, every one will admit that only in a small number can it be recognised clinically, and I have therefore adhered to the old well-known term.

Under certain circumstances, active inflammation may supervene, and on the body more or less inflammation is the rule, when the presumptive parasite is successfully planted out. It is proposed to discuss in the present section the varieties of dermatitis thus excited, all of which, in my opinion, it is not wise to include under the one term seborrhœic eczema. As a matter of fact, the dermatitis may imitate an eczema, a psoriasis, or a lichen, and a clearer conception may be gained of a multiform process by adopting terms that point out the clinical resemblances. It must be borne in mind that there is the possibility that these various inflammations may not be all directly seborrhœic, but that the presence of seborrhœa offers a suitable soil for the growth of other microbes.

Seborrhœa Eczemaformis (the **Eczemaform Seborrhœide**).^{*} Seborrhœa may go on for years upon the head without showing any external sign of inflammation, and without even attracting the patient's notice, except by the gradual thinning of the hair

^{*} Author's Atlas, plate x., figs. 3 and 4, circinate eruption of the face and nape ; plate xi., extensive papulo-squamous eruption of the back ; plate lxxx., acute inflammation of the head and face, supervening after great worry on a long-standing seborrhœa capitis. Fig. 2 of this plate illustrates eczema palmæ.

which it induces; or if in the branny form, by the scaly dust that is shed upon the clothing. Then, under some depressing influence, either mental, such as worry or anxiety, or bodily illness, active inflammation supervenes; the scalp becomes hot and red with abundant flaky and fatty scales, and the affection is perhaps no longer confined to the hairy scalp, but extends beyond for a short distance, with bright redness of the skin, more or less scaliness, and a well-defined margin. Discharge is often absent, but may be easily excited by scratching or the slightest irritation, whether from injudicious applications or other cause; but, from the large admixture of fat, the crusts are softer and less adherent than in ordinary eczema of the head. The lower part of the face is seldom involved in such cases; but if there are any patches, they are always well defined, and do not discharge.

Unna also includes under *seborrhæic eczema* the dry, scaly, slightly reddened patches, with well-defined borders, often seen on the back and sides of the neck, sometimes extending into the scalp. They are generally roundish solid patches, but sometimes have a gyrate outline.

They are the *lichen circumscriptus or simplex* of Vidal.

Round, well-defined, dry scaly patches are occasionally seen on the limbs and trunk, which are probably, but not demonstrably, of seborrhæic origin.

A milder form of inflammation is, however, not infrequent as an independent affection on the nose, cheeks, or forehead, the affected area being only pale red, with defined margin and dry, scaly surface.

The *treatment* for this condition is that for other active inflammations of the skin, plus bactericides, of which iodoform is one of the best—*e.g.*, iodoform gr. 10, ung. zinci oleat. ℥j, or boric acid ointment ℥j, with gr. 4 of eucrophen, either ointment to be applied constantly. Sulphur from gr. 5 to gr. 20 is also valuable. Where the inflammation is not so active, resorcin gr. 10, and liq. plumbi subacet. ℥xx, adip. benz. ℥j, is a good formula; and in slight degrees of inflammation precipitated sulph. gr. 10 to ung. simplicis ℥j, or weak ammoniated mercury ointment, with or without the yellow oxide, are excellent applications. These stronger ointments should be gently rubbed into the scalp two or three times a day.

Internally, any derangements of the alimentary canal must be rectified, and then such tonics as may be suitable should be given, with a supporting diet, but with very little alcohol.

Chronic patchy forms are most benefited by mercurial or sulphur applications; but resorcin, salicylic acid, or naphthol are good alternative drugs. Vasogen iodine 10 per cent. ℥ij, paraffin liquidi ℥ij is a good formula.

On the body, papular and scaly forms of inflammation are most frequently met with. *Eczema palmare*, which Unna considers seborrhœic, is described with ordinary eczema.

Seborrhœa Psoriasiformis (the **Psoriasiform Seborrhœide**).^{*}—This is one of the least common forms. It is the form of disease of which cases were described by Brooke[†] and by Wickham.[‡] It consists of well-defined bright red patches, with scanty, scaly, and fatty crusts, contrasting with the bright silvery epithelial crusts which almost always cover a typical psoriasis patch which has not been interfered with, but it is very like a psoriasis in which the scales have been partially removed by treatment or free sweating. The individual patches are not large, roundish, and may clear in the centre; but they may coalesce with others, and then cover a considerable area. The eruption is chiefly met with in the axillæ and on the trunk, but may appear slightly on the face and upper part of the limbs, but does not affect the usual psoriasis positions on their lower segments.

A few patches may also be seen on the scalp, and then they are more crusted; but more frequently there is only ordinary *S. capitis*, without signs of inflammation.

The *diagnosis* might be made by the distribution, the scales being more fatty and less abundant, by the surface being a deeper red than most cases of psoriasis, and by the presence of *S. capitis*.

The *treatment* should be to remove the scales with soft soap, and then rub in a mild parasiticide. Thymol, resorcin, or sulph. præcip. gr. 10 to gr. 20 to ℥j of lard, vaseline, or lanolin.

The *S. capitis* should also be treated, and any defect in the general health attended to.

^{*} Author's Atlas, plate lxxxi., fig. 1.

[†] Brooke, "The Relation of the Seborrhœic Processes to some other Affections of the Skin," *Brit. Jour. Derm.*, vol. i. (1889), p. 247, with coloured plate.

[‡] Wickham, Letter from Paris, *ibid.*, vol. iii. (1891), p. 256.

Seborrhœa Papulosa seu Lichenoides (the **Papular Seborrhœide**).*

[*Synonyms*.—*Lichen circinatus*; *L. circumscriptus* (Willan and Bateman); *L. annulatus serpiginosus* (Wilson); *Seborrhœa corporis* (Duhring); *L. gyratus* (Biett and Cazenave).]

Definition.—A serpiginous, papular, ringed eruption, limited to the trunk and associated with seborrhœa.

Symptoms.—Slight degrees of this disease, which was first described by Willan and Bateman, are fairly common, though it is often only discovered accidentally, as it gives rise to no inconvenience beyond slight itching. It is for the most part limited to the middle and front of the chest and the inter-scapular region; or in more extensive cases, occupies a triangular area with the base at the shoulders and the apex at the lumbar region. It may occasionally spread over the greater part of the trunk; but the limbs, except where they join the trunk, and the face are never affected. It begins as a group of rounded, small pin's-head-sized, bright red papules, occasionally with a scale on their apex, which soon coalesce into a disc about two lines in diameter; and as this enlarges peripherally the centre clears, forming a ring, the papular structure of which is more or less evident, while the central area is of a fawn colour. When several rings coalesce, the margin is broken, and a fawn-coloured, slightly scaly area is produced, resembling *tinea versicolor*, when of considerable size, but bounded incompletely by a red, gyrate, slightly raised papular margin. Isolated lesions of circles, or segments of circles, are situated in the neighbourhood of the main patch, and here and there are scattered papules ready to start a fresh one. Slight scaliness and marked greasiness (seborrhœa) are almost invariably present on the skin, and seborrhœa of the scalp is associated in a large proportion of cases.

Etiology.—The disease is most frequent in those who sweat freely and wash sparingly, and is so common in those who wear thick woollen underclothing that at the Blackfriars Skin Hospital it is familiarly known as "flannel rash."† It is more common in men than women.

* Author's Atlas, plate lxxxii.

† In some lectures on "Lichen," in the *Lancet* in 1881, I described and figured a fungus which I then thought was the cause of the disease, but further observation has convinced me that its presence was accidental. Micrococci are abundant enough, but where are they not?

Diagnosis.—The characteristic features are the fawn-coloured areas, with red, papular, ringed, or gyrate borders, situated in the middle of the chest and back, and never affecting the limbs. The position and yellow colour of the internal area render it easily mistakable for *tinea versicolor*, but the characteristic fungus of the latter disease is absent, and the tinea lacks the red papular border of the *L. circinatus*. The diagnosis from *pityriasis circinata* is given with that disease.

Treatment.—This is simple and effectual, and need only be local. Any mild parasiticide, such as glycerine of borax, thymol gr. 20 to adipis ʒj, rubbed in night and morning, will speedily remove the eruption, even when it has been present for years. A few weeks' watchfulness against recurrence, owing to insufficient treatment, and more frequent ablutions and change of under-clothing are necessary to prevent recurrence.

SEBACEOUS CYSTS.

Synonyms.—Wen ; Atheroma ; Steatoma.

Definition.—A cystic tumour with sebaceous contents.

Symptoms.—Sebaceous cysts vary from a millet seed to an orange in size, are roundish in shape, and either flattened or hemispherical. They may be single or multiple, of doughy consistency usually, but if inflamed, may become quite pultaceous, or if old, rather hard. They are freely movable under the skin, not tender or painful, and grow very slowly as a rule. The skin over them is normal, or white from distension unless they are inflamed, when it becomes red, and the cyst may break down and ulcerate and perhaps fungate, resembling a rodent ulcer (see "Follicular Disease of the Scalp"). Their commonest positions are the scalp, face, neck, and back, but they may grow anywhere where there are sebaceous glands, and in rare instances, even where there are none normally, such as on the palms, fingers, soles, in the floor of the mouth, under the tongue, and even in the anterior chamber of the eye after wounds. These are sometimes called dermoid cysts to distinguish them, but are not true dermoids, which are of congenital origin. When the duct is patent, they are usually flat, not very large, and are commonly situated in the thick skin of the back and neck ; but I have

excised one as large as a walnut from the chest. It is from this kind that so-called horns may develop (see "Cornua"). When the duct is closed, they are usually globose, and grow most frequently on the scalp, but are hairless. They are most common in middle-aged women.

Multiple sebaceous cysts in every region of the body are considered separately. They are probably the same as the sudoriparous fat cysts of Dubreuilh (see p. 1058).

Another form is the tumours in connection with the Meibomian glands, from a pin's head to a nut in size, though not often larger than a pea. To these the term **Chalazion** is given; they often recur, and are sometimes numerous. Although these little tumours are generally placed among sebaceous cysts, Virchow years ago, and quite recently Weyman, have shown that they are really neoplasms of the granuloma order; and, according to Weyman, a fungus can be demonstrated, which he calls the "fungus chalazicus," and considers it pathogenetic.

Pathology.—Sebaceous tumours are said to be caused by accumulations of epidermis and sebaceous masses in the follicles, with hypertrophy of their walls. Paget, however, regards them as new growths. The gland is obliterated quite early, and the secretion must therefore come from the cyst wall. The contents may be meliceric, *i.e.*, fluid and honey-like, consisting of free fatty granules and epidermic cells, or steatomatous of more firm consistence, with more epidermic cells and less free fat. Cholesterin is generally present, and sometimes coiled-up hairs. The cyst wall is described by Cornil and Ranvier, as made up of connective tissue with flat cells and parallel lamellæ of ground substance. It is lined with epithelium, comparable to that of the tunica interna of the arteries, and in it also fatty, calcareous, and atheromatous changes are common. To account for sebaceous cysts in the eye, palm, etc., after wounds, it has been suggested that, at the time of the wound, some part of a sebaceous gland had been transplanted on to the wounded part, but there are no known facts to support such a theory and probably the inclusion of epidermic cells of any kind is sufficient, just as dermoids are considered to be due to the inclusion of embryonic epidermis. Their possible origin from embryonic remnants in the cutis must also be remembered. Török's observations go to show that nearly all sebaceous cysts are really dermoids, that there are papillæ with an epithelial covering in the

cyst wall, and that it was the exception to find fat in the cysts, and that therefore it could not be sebun. True retention cysts are macro-and microscopically distinguishable, and allied in structure to the double comedo.*

Diagnosis.—With the duct patent, the nature of the tumour is obvious, and some of the contents can be squeezed out as further proof. When the duct is closed, it may resemble a fatty tumour; but the position, and absence of lobulation, will generally indicate its nature.

Treatment.—The tumour should be excised, taking care to dissect out the whole sac, or it will re-form. The cyst itself is generally thin and easily ruptured, but it has a firm horny lining, which should be seized with the forceps after puncture, while the cyst is being separated. In chalazion, the incision over the tumour should be made on the conjunctival side, so as to avoid a visible scar.

Multiple atheromatous cysts have been reported by various observers, but not all of them with quite the same characters.† Dubreuilh and B. Auché described a case in a man of seventy-seven years, in whom there were tumours from a hemp seed to a pea in size, round, defined, firm, subcutaneous, but adherent, or slightly projecting. They were the colour of the normal skin, unless very superficial, and then grey or yellowish, soft, pasty, or semi-fluctuating. On puncture, a soft whitish buttery mass or a yellow oily fluid escaped, consisting of 72 per cent. of fat, 19·5 of water, and 8 of divers residues. Under the microscope, there were only fat and a few multicleated cells.

They were in all regions, but chiefly on the trunk, in masses in the axillæ, many on the scalp, where they resembled wens, and a few on the limbs, but the palms and soles were free.

* L. Török, "Ueber die Entstehung der Atheromacysten (Epidermoide Franke)," etc., *Monatsh. f. prak. Derm.*, vol. xii. (1891), p. 437. Good abs. *Brit. Jour. Derm.*, vol. iii. (1891), p. 365. See also Sutton's Hunterian Lectures on Dermoid Cysts, and Reverdin, who analysed thirty-two cases in *Rev. Méd. de la Suisse Romande*, March 15th, 1887.

† Jamieson, numerous cutaneous cysts, *Edin. Med. Jour.*, vol. xix. (1873), p. 223. Maclaren, *loc. cit.*, vol. April, 1887, p. 932. Chiari, Vienna corr., *Brit. Med. Jour.*, April 12th, 1890; also paper on "Atheroma-cysts," Inter. Cong. Berlin, 1890. Dubreuilh, "Kystes graisseux sudoripares," *Archives cliniques de Bordeaux*, 1896, No. 9. Bocellini, "Beitrag zur Lehre von den multiplex follicularen Hautcysten," *Archiv f. Derm. u. Syph.*, vol. xlv. (1898), p. 81; references. Unna's *Histopathology*, p. 891.

Microscopically, they were found to be thin walled cysts lined with flat epithelium, and derived from the sweat glomerulus, and they therefore called them sudoriparous fat cysts. A similar case in a young man, æt. twenty-one, was shown by Pringle at the Dermatological Society of London in 1898. In this case, when the cyst was pricked with a pin a turbid oil flowed out. In Bocellini's case, which was clinically very similar, in a man æt. forty, the tumours were from a hemp seed to a bean or larger in size, contained olein and palmitin, and were clearly of sebaceous origin, the sweat coils taking no part in them.

Jamieson and Maclaren have also had cases with two hundred and fifty and one hundred and fifty tumours respectively. In Jamieson's case the contents were a turbid brownish liquid, and he considered them sebaceous. Hebra and Rayer are said to have had cases, but they were different from the above. In Chiari's case, a man of seventy-four, they were innumerable, and he pronounced them to be true retention cysts, finding, like Bocellini, a horny plug; he also found growing hairs and epidermic cells. The obstruction is at the exit of the duct, and the cyst is found there, and not in the gland itself.

Dermoid cysts * of the skin are generally single. Multiple dermoid cysts are very rare. They are all remarkably—in fact, as a rule, indistinguishably—like fibroma tumours, from a pin's head to a hazel-nut in size, until excised, or at all events incised, when sebaceous-looking matter escapes. In a case of Sangster's, reported by Pollitzer,† although most of them were like fibroma nodules, and therefore the colour of the normal skin, those over the mastoid process and clavicles were of a lemon yellow, and were generally thought to be xanthoma until they were excised, and Pollitzer found that they were typical dermoid cysts, the wall presenting a well-marked papillary layer, the contents made up of cornified and degenerated epithelium and detritus, and in most cases, a coil of hair and brownish or black pigment. Their numbers and benignity forbid treatment, unless they are in an awkward or unsightly position, when they might be excised.

* In the *Brit. Med. Jour.*, February 18th, 1888, Sibthorpe reports and figures a case of congenital pilo-sebaceous cysts as large as a cocoa-nut on the front of the scalp.

† Pollitzer, *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. ix., August, 1891; and *Brit. Jour. Derm.*, vol. iii. (1891), p. 398—also referred to under "Xanthoma."

Follicular Disease of the Scalp. In *Guy's Hospital Reports*, Edward Cock,* and subsequently Goodhart, published a series of cases of tumours of the scalp which ulcerated and in some cases fungated, and were supposed to be derived from the sebaceous follicles. A still more extensively fungating tumour is published by Hutchinson, supposed to be secondary to a sebaceous cyst. These growths were chiefly situated on the crown of the head, but may also come elsewhere about the head and face. Thus, one of Cock's cases was on the abdomen, but it grew from a mole which was abraded. Goodhart examined the tumours, and found them to be mainly composed of epithelium, with imperfect septa of ill-developed fibrous tissue. They all seem to start from sebaceous cysts, and are, in spite of their epithelial structure, evidently benign. Rivington removed the very large fungating growth reported by Hutchinson, chiefly with Paquelin's cautery. The operation was attended with profuse hæmorrhage, but there was no recurrence, five years later.

Ballantyne† records two cases of congenital growths on the scalp which histologically were acanthomata. There was every stage of development of sebaceous glands, but only traces of the sweat glands and no hairs. The tumour in one case was of the size and shape of a child's thumb. Ballantyne suggests that an adherent amnion early in foetal life might have led to its formation.

MILIUM.‡

Deriv.—*Milium*, a millet seed.

Synonyms.—Grutum ; Strophulus albidus ; Acne albida ; Tuberculum sebaceum.

Definition.—A small pearly-white sebaceous tumour, situated just below the epidermis.

Symptoms.—Milia are situated chiefly upon the face, especially upon the forehead, orbit, and cheeks ; they are generally about the size of a millet seed or smaller, and occasionally as large as a

* *Guy's Hospital Reports*, 2nd series, vol. viii., Part I., 1852, p. 151, several coloured illustrations ; *ibid.*, 3rd series, vol. xviii., 1873 ; *Hutchinson's Archives*, vol. ii., No. 8, 1891, plate xxix.

† *Brit. Jour. Derm.*, November, 1897, vol. ix., p. 421.

‡ Author's Atlas, plate lxxxiii., figs. 1 to 4.

small pea; they may be in small or large numbers, are quite white when small, and may be translucent, spherical in shape, quite superficial, form slowly up to a certain size, and then remain stationary for years.

Variations.—As a rule, they have no special arrangement, but I have once seen them arranged symmetrically on the “clown-patch” of the cheeks in a young woman in the same way as will be described in comedones, and groups on the inner canthus are common in elderly persons. Occasionally, they may be seen in other parts of the body, such as the scrotum and penis. Here, and on the eyelids, they coalesce into comparatively large flattish tumours from a pea to half a bean in size, assume a yellowish colour, and may become very hard from the deposition of calcareous salts, chiefly phosphate, with a little carbonate of lime, and constitute then the so-called **cutaneous calculi**.* A case of osteosis of the epidermis of the sole is recorded by Warren Coleman.† An extreme case of a milium-like condition of the red part of the lips was recorded by Fordyce,‡ yellowish dots and streaks appearing in close aggregation in vertical lines. They were, however, not true milium, but due to keratohyalin change in the epidermic scales. Minor degrees of it are not uncommon.

Etiology.—Milia are common in young infants (**strophulus albidus** of Willan), probably from over-stimulation of the skin by being held too closely to the mother. They may, however, be present from birth, and are then of embryonic origin. They are most common in young adults, frequently in association with acne vulgaris, and sometimes follow pemphigus, forming small groups or single spots on the site of the bulla. Less frequently they may be seen after superficial inflammation from erysipelas, or cicatrices after atrophy or ulceration, as in lupus and syphilis. They are always present in the rare lymphangioma tuberosum multiplex either on or between the lesions. Frequently, there is no assignable cause.

Pathology.—They are usually considered to be due to retention of secretion in some of the acini of a sebaceous gland, or to be

* Barlow met with concretions of this kind on the abdomen, and Foster of Boston is quoted by Duhring as having met with one on the face of a young woman, where it formed a small, oval, hard tumour.

† *Amer. Jour. Cut. Dis.*, vol. xii. (1894), p. 185.

‡ *Loc. cit.*, vol. xiv. (1896), p. 413, with coloured and microscopic plates. *Vide* Pseudo-Colloid of Lips, p. 702.

undeveloped glands ; but Robinson * of New York thinks that they are of two kinds, of which one consists of " miscarried embryonic epithelium from a hair follicle or from the rete," which contains no fatty epithelium and has no duct ; the other has a duct and is really a deep-seated comedo, the contents consisting of fatty epithelium and cholesterin.

Diagnosis.—The milium masses on the eyelids of elderly people may be mistaken for *xanthoma* (see that disease for the marks of distinction). The usual white globules are quite unmistakable.

Treatment.—Having no duct, an incision should be made over them, and they are readily shelled out. A touch of iodine tincture may be applied to the sac if they recur. Hardaway recommends electrolysis by passing a fine needle, connected with the negative pole of the battery, into the little tumour. In infants, the free use of soap and water is generally sufficient.

MILIUM CONGENITALE (en plaques).†

I have described two cases of this rare congenital defect, Hans Hebra ‡ and Erasmus Wilson § have independently published a case each under different names, and Colcott Fox || has shown a case at the London Dermatological Society.

The condition occurs in patches on the head and face ; the patch is of a pale reddish-yellow, but redder at times, the surface is finely granular, consisting of closely aggregated pale yellow pin's-point papules, the patch as a whole is slightly raised upon the surface. The sharply defined border is more raised than the rest, the papules are more distinct, and there are many comedones on the borders and a few scattered about the surface. The patches on the scalp are quite hairless. They are present at birth, and change very little, if at all, afterwards ; possibly it may be due to adherence of the amnion at an early stage of foetal life, or to a deep-seated intra-uterine inflammation.

* Robinson's *Manual of Dermatology*, First Edit., p. 73.

† *International Atlas*, plate xxx. ; one case was previously reported in the *Clin. Soc. Trans.*, vol. xiii., 1880, with coloured plate.

‡ Hans Hebra, " Congenital Defect of the Cutis," coloured plate.

§ Erasmus Wilson, *Jour. Cut. Med.*, No. 2, July, vol. i. (1867), p. 211, *Nævus folliculosus*.

|| Colcott Fox, Rep. of Derm. Soc. Lond., *Brit. Jour. Derm.*, vol. ix. (1897), p. 21.

Microscopically I came to the conclusion that the structure which I at first thought were sebaceous glands were really identical with the milium due to miscarried embryonic epithelium, as described by A. R. Robinson.

The structure was made up of nucleated epithelial cells enclosed in a fibrous pseudo-capsule, and situated superficially in the corium. Nothing can be done unless the lesion is small enough to be excised and primary union obtained.

Hypertrophy of the Sebaceous Glands.* In this affection there is an actual increase of gland tissue by multiplication of the acini. In old persons it may sometimes be seen on the face, especially on the forehead, where slight degrees are not uncommon, and on the nose. One of the most extensive cases I have seen was that of a woman, æt. sixty, who had some jaundice, probably from carcinoma of the liver. She had been densely freckled all her life, the freckling extending down to the lower-rib margin in front and all over the back. Besides this, round the orifices of all the glands of the whole face were flat, very pale yellow accumulations in the form of discs, $\frac{1}{16}$ to $\frac{1}{8}$ inch in diameter, with a minute slightly depressed puncture in the centre. They were very closely set all over, but discrete, not at all raised above the surface, not perceptible to the touch, but isolated lesions may be seen in other cases as slightly raised rather firm nodules. I have seen a very similar condition all over the neck of a woman with jaundice and general xanthoma, but the lesions themselves were quite different from xanthoma, and slight degrees are common when there is no suspicion of hepatic disorder. In a lesion from the forehead of an elderly man the only changes were great multiplication of the acini of the sebaceous glands, and atrophic degeneration of the lanugo hair follicle.

In November, 1895, Dr. Sangster sent a lady, æt. forty-one, to me of apparently the same affection on the temples and cheeks which had been developing from the age of sixteen. About a score altogether, they were from a pin's head to half a hemp seed in size, raised slightly, firm and yellowish, the older ones opaque with minute vessels over them, the smaller ones slightly translucent, and all had a slight depression in the centre and in some

* In the previous edition I called this affection "Atheroma cutis," but it had not then been examined microscopically.

there was a plug like that of molluscum contagiosum, but it could not be expressed. It was found that the best way to remove them was to incise them and scrape them out with a curette, which was not done without difficulty as they were firmly adherent. They healed without scarring. One near the angle of the mouth was excised, and proved to be an enormously enlarged sebaceous gland (fig. 67). Pollitzer's* case was of the same character, but was in a vertical linear group over the left eyebrow of a man, æt. twenty-five, and had been developing six or seven years.

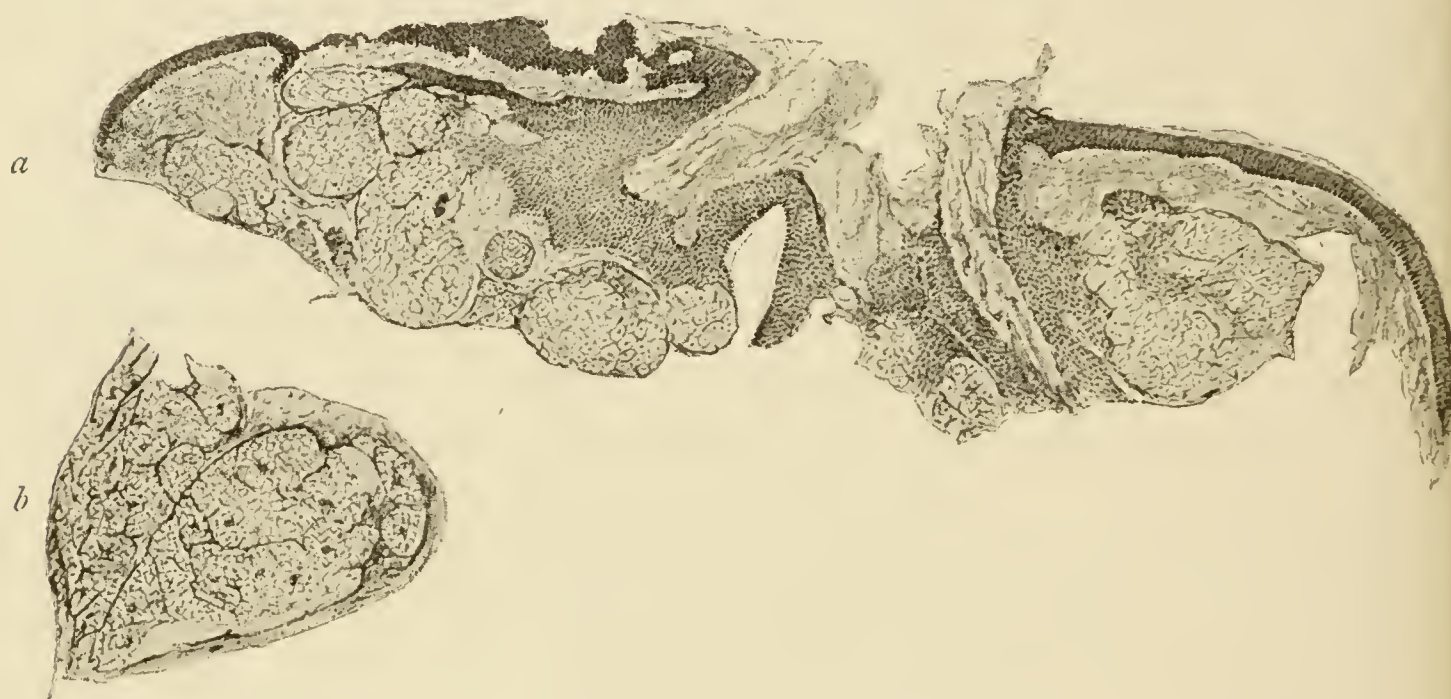


Fig. 67. *a*, yellow nodule consisting of hypertrophied sebaceous gland; *b*, Acinus from *a*. *a*, $\times 1$ inch Ross 6 inch tube; *b*, $\times \frac{4}{10}$ high angle 6 inch tube.

COMEDONES.

Deriv.—*Comedo*, a glutton.

Definition.—Black points or papules formed by sebum and horny cells blocking the orifice of the duct.

This common affection is seen chiefly on the face and back, neck and chest. Each comedo forms the well-known black point or pin's-point-sized papule so conspicuous on the face of many adolescents and young adults, and occasionally in older persons. Sometimes comedones contain the *acarus folliculorum*.† They

* Pollitzer. A case of adenoma sebaceum. *Amer. Jour. Cut. Dis.*, vol. xi. (1893), p. 475. It is quite different from the classical adenoma sebaceum.

† To see the *acarus*, ten or a dozen comedones should be taken, and teased out in glycerine. They do not appear to have any pathological importance in the human subject, but a similar *acarus* in dogs sets up considerable inflammation, constituting "follicular mange."

vary in number from one here and there to myriads, peppering, so to speak, the whole countenance, but are most abundant on the forehead, temples, sides of the cheeks, and the nose. When numerous, they are associated with more or less oily seborrhœa, and as they are very liable to inflammation, acne vulgaris in one or other of its phases is seldom absent. They can easily be expressed by the nails, looking like a maggot, and on the back and chest are often comparatively large, and may be double from the fusion of two plugs by suppuration of two adjacent follicles with a bridge of skin between the orifices.

A very remarkable example of *scar comedones*, in which large single and double comedones existed in masses, was shown at the London Dermatological Congress in 1896 by Selhorst of the Hague in an acneiform nævus.* Thibierge has recorded a very similar case. I have seen them very numerous and large on the scalp as the result of extensive kerion. De Coquet † records an extreme instance on the face, after small-pox.

Lang showed a case to the Vienna Dermatological Society with comedones on the glans penis and prepuce; and besides this rare position, there was the additional rarity of atrophic scars at the orifice of the follicles. Neumann showed a similar atrophic scarring from comedones all over the usual positions in a woman.

The etiology, pathology, and treatment are discussed along with Acne Vulgaris.

Grouped Comedones. These differ from the preceding in their position, arrangement, and etiology, and in having no relation to acne vulgaris. Thin ‡ was the first to write about them, and I published cases corroborating what he had said, and showing that further observation by myself and others pointed to dyspepsia as the commonest predisposing cause, and that they occur chiefly on the cheeks and those parts of the face where flushing after meals is most marked. They form symmetrical groups of densely crowded black points on both sides of the face, and the individual

* "Nævus Acneiformis Unilateralis," Selhorst, *Brit. Jour. Derm.*, vol. viii. (1896), p. 419, with photos.

† Abs. *Brit. Jour. Derm.*, vol. v. (1894), p. 320.

‡ *Lancet*, October 13th, 1888, and by myself October 27th—both papers illustrated. See also Wetherell and Sympson, who report single cases in vol. i. for 1889.

lesions are much smaller and more uniform in size than in most cases of ordinary comedones. There is little or no tendency to inflame and suppurate. I have twice seen densely crowded comedones on the trunk, but without any tendency to group, and associated with suppuration of a large number of them. One was in an old man, and they were all over the abdomen; the other was a case of Sangster's, which he kindly allowed me to photograph—a middle-aged man, in whom the upper part of the chest and nearly the whole of the back were involved. Large comedones, single or in masses, may often be seen in the faces of old persons. They are not infrequently massed at the corner of the orbits. These are not to be classed with the preceding cases.

Children.—Hitherto comedones have been considered to be an affection not seen before puberty, but in June, 1882, I saw it at the East London Hospital for Children in a child aged three and a half years. This was soon followed by other cases, and similar instances have been met with by other observers, and it is now not an uncommon affection among the poor in summer; yet it is apparently a new condition, as I know of no previous notice of the affection prior to my own.* They appear on the upper part of the forehead and corresponding parts of the occiput in boys above three, on the temples in girls, and on the cheeks in infants, and occasionally in other situations. They are usually very densely packed, often grouped, occasionally symmetrically, like the adult cases, and give the part a very dirty and sometimes black appearance, and seborrhœa is often present on the head. The contents are rather firmer than usual, containing less fat. Most of them do not inflame spontaneously, but do so if roughly squeezed or otherwise irritated.

The condition appears to be excited by warmth and moisture, and perhaps by other local irritants in predisposed subjects; it corresponds to the position of the cap in boys, and in infants appears to be due to their being held closely to the mother in nursing. I have seen it from the use of linseed poultices all over the back and chest, many of the comedones suppurating like ordinary acne. I have also known it to occur simultaneously in several members of a family, and it was stated to have attacked a large number in

* See *Lancet*, April 19th, 1884; also a letter by Julius Cæsar, on May 6th, in the same volume, and an article by Colcott Fox, April 7th, 1888. Author's Atlas, plate lxxxiii., fig. 5.

a school, suggesting a bacterial source of contagion. Haddon and others have met with similar instances pointing to contagion.

Their chief peculiarities consist in their being apparently due to local causes, among which want of cleanliness is the potent factor; in their tendency to group and to be more closely set; in their involving the hairy scalp; in their being less likely to set up inflammation, and in their amenability to local treatment. Bathing with hot water, followed by friction with a liniment of *sapo mollis* half an ounce, *spiritus vini* an ounce and a half, or in slight cases rubbing in a weak sulphur ointment, or an alkaline lotion, such as glycerine of borax one part to three of water, are generally sufficient for their removal. A perchloride of mercury lotion 1 in 1000, after soft-soap frictions is also recommended.

ACNE.

Deriv.—*ἀκνή* or *ἀκμή*, a point, or, as some think, *a*, privative, and *κνέω*, to itch.

Synonyms.—*Lat.*, Varus; *Gr.*, ἰονθος; *Fr.*, Acné; *Ger.*, Hautfinne.

Definition.—The term acne is used for the lesions produced by inflammation, chiefly pustular, in and around the sebaceous glands and hair follicles.

Under this head are included:—(1) Acne vulgaris or adolescentium, with the varieties acne cachecticorum and acne artificialis (all sebaceous); (2) Acne rosacea (partly sebaceous); (3) Acne scrofulosorum (follicular); (4) Acne varioliformis (follicular); (5) Acne keratosa (follicular); (6) Acne necrotisans (sebaceous).

Whenever the duct of a sebaceous gland is occluded, inflammation is very likely to ensue.

In A. vulgaris, the sebaceous secretion itself forms the plug. In tar acne, and the acne occurring in those engaged in greasy occupations, the tar and fat stop the excretion of the sebum.

In A. cachecticorum and in the so-called bromide and iodide acne, the changes are probably in the blood vessels; the latter and tar acne are described under Drug Eruptions. In A. rosacea, the sebaceous inflammation is also secondary to the blood-vessel alteration, which produces the chief symptoms, while the pathology of A. varioliformis is still unsettled.

Acne is used in a much wider sense in France, being applied to many sebaceous and other affections, even when the lesions are not elevated into papules and pustules, but this abuse of the term is gradually being given up. A reference to the Index will show into what category these disused synonyms should be placed.

ACNE VULGARIS.*

Synonyms.—Acne adolescentium ; Acne disseminata ; Stone pock.

Definition.—Inflammation of the sebaceous glands due to retained secretion, occurring chiefly in young people.

A. vulgaris is a very common disease in adolescents, though it does not form more than $2\frac{1}{2}$ per cent. of all forms of skin disease which come to a special department, but in private practice it forms 6 per cent. It is of all grades of severity, from one or two small pustules at a time, up to thickly aggregated papules, pustules, and nodules in all stages of development and retrogression. Whilst each stage of development has received a different name, A. cachecticorum is the only kind which is entitled to a separate designation and description.

Symptoms.—The disease does not occur before puberty ; it is common from then onwards for about ten years, and declines almost to a vanishing point at the age of thirty. It is limited, in the great majority of cases, to the face (chiefly at the sides and on the forehead, but it does not go back into the scalp), the neck, chest, and back, chiefly about the shoulders, and its extent is largely dependent upon the number of comedones present, round which the inflammation commences, and forms at first a red papule, soon becoming a pustule on a red raised base, with a central black point (**A. punctata**), or if the plug is within the gland, instead of at the orifice, there is a pustule without an obvious comedo (**A. simplex**). When the pustule with its red base enlarges to the size of a hemp seed or small pea, it is **A. pustulosa**, and when the inflammation extends to the tissues round the gland, or begins deeply so as to form a hard, pea to a bean-sized, deep red or purplish nodule, which subsequently softens in the centre, but seldom ruptures spontaneously, as it has no orifice, it is **A. in-**

* Author's Atlas, plate lxxxiv., fig. 1.]

durata. But all these names are superfluous, and will doubtless be dropped eventually. These lesions, although bilateral, are not symmetrical, are discrete, and not grouped in any way; hence the term *disseminata*. The process may stop short at any of these stages, especially if the contents be evacuated without violence; but as fresh lesions frequently form, and others involute or discharge, all phases of the eruption may be seen simultaneously in one patient. *A. indurata*, however, occurs chiefly in strumous subjects, and leaves livid indurations, which slowly disappear. The small, superficial pustules may leave no scars, but the larger and deeper lesions lead to considerable scarring and much consequent disfigurement, and on the chest and back small keloid tumours sometimes develop in the cicatrices. In some instances, the comedones are numerous, but only a few inflame; in others, a large proportion go on to acne lesions. Where the comedones are abundant, more or less seborrhœa, especially the oily form, is present, and the complexion is thick and muddy. Beyond the disfigurement and the tenderness of the large pustules, the eruption produces but little inconvenience.

Variations.—*A. vulgaris* occasionally persists after thirty, and may exist to some extent throughout life; the back and chest are then considerably involved, with large indurated nodules, and I have seen the whole back one mass of confluent scars, pustules, and large comedones. Ord showed a case at the Clinical Society in April, 1892, in which the comedones and pustules ran round the body in a band but not in the course of nerves. In a case of Lewin's of Berlin, pigmentation of the site of the acne pustules occurred. Under adverse conditions the disease may generalise as in the case of a clerk, * *æt.* twenty-one, who was always subject to *A. vulgaris* in the usual positions, and after overwork and loss of rest, the whole face, trunk, and limbs to the elbows and knees were in four days thickly covered with red papules and pustules of the usual acne type, each pierced by a hair, or with sebum at the orifices; the glands also in the axillæ and groins were enlarged.

This exceptional generalisation of *A. vulgaris* constitutes *A. cachecticorum*, which is not limited to certain regions, but occurs anywhere, except on the palms and soles. The lesions are not due, as a rule, to retention of the secretion, and there are therefore no antecedent comedones; hæmorrhages frequently take

* *Private Notes*, 1880, p. 101.

place into the pustules, which have then a livid border and leave long persistent, purplish scars behind them. In this form, it may be seen sometimes during recovery from scurvy, and I have seen a few cases in middle-aged and elderly people due to semi-starvation.* It may also in rare instances attack the follicles† of the limbs without any cachexia or traceable cause, of which I have seen a few instances.

Etiology.—Disseminated comedones and acne may be considered as almost identical as regards etiology; males and females are equally liable to them, and in hospital practice, three-fourths of my cases were between the ages of fifteen and twenty-three, the extremes being thirteen to forty-four years; but one private case, a diabetic man, was sixty-seven years of age. Practically the disease is only prevalent from thirteen to thirty.

If Sabouraud's views are correct, that the seborrhœic microbe is the cause both of seborrhœa and the comedo, it is obvious that the presence of seborrhœa capitis must play an important part in the etiology of the comedo and its sequence the acne pustule, and as a matter of fact they are generally concomitant. Indeed, Sabouraud says that there can be no acne without preliminary oily seborrhœa, though if in excess it prevents secondary infections. On the other hand, while seborrhœa may be present at almost any age, acne vulgaris and the comedo cease as a rule about thirty or earlier. Predisposing conditions are puberty and the physiological pilo-sebaceous activity, which characterises that period.

The frequency of acne in people with a thick skin and a sluggish circulation points to these also as factors. Local causes, such as cold winds, the use of irritating cosmetics, working with tar, paraffin, chlorine makers,‡ etc., and insufficient washing, play a

* One of these, a well-marked case, was published by Tilbury Fox in the *Lancet* of April 5th, 1878. A very severe and curious form in a boy of fourteen is published by Bronson in *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. vii. (1889), p. 401. Kaposi had a case of apparently ordinary acne of the trunk, which left slightly depressed discoid scars, from a lentil to an inch and a half in diameter; some of them were pigmented, and granulation tissue was found under some of the crusts. He called it acne cachecticum. *Ann. de Derm. et de Syph.*, vol. iii. (1892), p. 316.

† Author's Atlas, plate lxxxiv., fig. 2.

‡ By electrolysis from chloride of sodium, Sabouraud has proved that the plugs are ordinary comedones and contain the special micro-bacillus. The acne is severe.

certain part, either by plugging the orifices or irritating the glands ; but far more important is reflex hyperæmia, produced by derangement of the alimentary canal, especially constipation and dyspepsia, which were present in a large proportion (more than half of my cases) ; uterine and ovarian disorders, especially those which lead to catamenial derangement, are also causes, and, even when this function is undisturbed, the eruption often undergoes exacerbation immediately before a period. All debilitating causes predispose to acne, of which anæmia and chlorosis, too rapid growth, and perhaps masturbation, may be especially mentioned ; mental and physical exhaustion have preceded fresh outbreaks in many cases ; struma and scurvy not only cause, but modify, the kind of inflammation, leading to freer suppuration than usual. Diet has some effect, beer and the excessive consumption of sweets are predisposing causes, but this may be because so many acne patients have imperfect digestions.

Pathology.—According to Unna, the comedo is the product of hyperkeratosis extending from the surface to the mouth of the follicle, and consists, therefore, chiefly of horny cells, mixed with normal sebum and not, as used to be thought, the result of abnormal secretion. The black head is the result not of dirt, but of degeneration of the compressed horny cells. Sabouraud's observations go to prove that the comedo is the result of bacteriological action, viz., that of the seborrhœic bacillus which he has rediscovered, and that practically a comedo is in the main a "cocoon," as he calls it, of seborrhœic bacilli, of course with horny and fatty cells and rudimentary hairs. Unna recognises flask bacilli (spores of Malassez), and a diplococcus which he regards as the cause of seborrhœic eczema ; but these he considers accidental, as they are in the upper part of the comedo, and not invariably present, while another bacillus which is constant is situated in the lowest part of the comedo. The last are a third to half a μ broad by $1\frac{1}{4}\mu$ to $1\frac{1}{2}\mu$ long, with very irregular arrangement, though sometimes in a thread of three or four. They are, he considers, mucin-producing bacilli and the cause of suppuration, the presence of staphylococci being unnecessary and exceptional, and if present they are accidental and only superficially situated. If the bacilli get free into the supra-comedo horny layers, a superficial acne pustule results. If the comedo is open.

at the bottom, they get deep into the follicle and the connective tissue round it, and an acne indurata ensues. The more superficial form leaves no permanent scar, the deeper one does either with depression or with a permanent increase of the connective tissue.

Such is Unna's explanation of the phenomena of acne, and it sounds feasible enough, but if Sabouraud is right, that the seborrhœic micro-bacillus is the cause of the comedo, the rôle of Unna's bacillus is at a discount, unless he and Sabouraud are describing the same organism with a different name. I do not pretend to decide between them, but Hodara's* independent observations support Unna's. He found in an early stage of the comedo, Unna's bacilli in small foci without any other organisms, while in comedones without acne they were quite absent. Sabouraud ascribes the inflammatory reaction to the secondary invasion of staphylococci producing a grey culture, apparently the morococcus of Unna. Gilchrist† in 1899 described a special pyogenic short thick bacillus, which in cultivations became longer, thicker, and showed division, and various branching forms were observed in older cultures. He discredits Lowry's observations on ten patients in which he found staphylococcus pyogenes albus. His own appear to have been carefully made on ninety-six pustules from fifty-five patients.

On the whole, the tendency of the evidence is in favour of a special pyogenic organism, but there may be a "tertium quid;" e.g., in "tar acne" the bactericidal action of tar is against the invocation of bacilli as the cause of suppuration, which appears to be mechanical. In like manner the effect of the comedo might also be largely mechanical, and most if not all of the micro-organisms found in the comedo may be secondary, and as harmless by themselves as a cause of the acne pustule as the demodex folliculorum which is so often present, but has no pathological significance.

Clearly the subject as a field for investigation is not yet exhausted.

Diagnosis.—The age of the patient, the dissemination of the lesions on the bust only, as a rule, the acute course of the individual lesions, the chronicity with exacerbations of the disease as

* Hodara, good abs. in *Annales de Derm. et de Syph.*, vol. v. (1894), p. 721.

† Gilchrist, vol ix., *Johns Hopkins Hospital Reports*, p. 420, "Research upon the Etiology of Acne Vulgaris."

a whole, the anatomical seat of the pustule, together with the presence of comedones, generally prevent any trouble in the diagnosis. The diagnosis of the so-called *drug acnes* is discussed with the drug eruptions.

A. rosacea occupies only the middle two-thirds, while *A. vulgaris* predominates on the sides of the face. *A. rosacea* patients are older, as a rule past thirty, and the sebaceous inflammation is only a part of the disease, the main feature being diffuse hyperæmia of the face and dilated vessels.

Acne varioliformis has a special localisation in the upper part of the face and the scalp, the latter is a position never affected by *acne vulgaris*, and the small-pox-like scars of the former are very distinctive.

When *A. vulgaris* is generalised, the circumstances, under which this generalisation occurs and the anatomical seat of the lesions will guide to a correct conclusion. The acute cases which somewhat resemble *variola* may be distinguished by the duration of the eruption, the absence of constitutional symptoms, and the absence of the eruptions from the forearms and wrists.

The *syphilitic* eruptions which resemble *acne* tend to group, which *A. vulgaris* seldom does.

Prognosis.—The ultimate result in all but a very few is spontaneous recovery. Most cases are quite well before twenty-five years of age, and few last beyond thirty. Treatment may, however, much shorten the period, and either completely cure or greatly ameliorate it. Success depends in most cases, on the possibility of detecting the cause, and being able to remove it; and the apparently causeless cases are generally the most obstinate. Where the suppuration is deep or very free, more or less scarring results, but the majority of the lesions are superficial, and leave no permanent trace behind.

Treatment.—The treatment of *acne* must be both general and local; for although local treatment alone will remove any eruption that may be present, in many cases, only general treatment, judiciously planned, and perseveringly carried out for a considerable period, will prevent its recurrence. Where there are no indications for general treatment, *seborrhœa capitis* is often the condition which requires removal. Many dermatologists of the present day, having regard to the microbic origin of the comedo, advocate local treatment only; but considering that the majority of

people do not get comedones and 'acne at puberty, and that every one must be exposed to so common a microbe as that of seborrhœa, there must be a suitability of soil present also, sometimes no doubt congenital, but in other cases acquired, and, as experience shows, capable of modification by general treatment.

The measures to be adopted are hygienic, dietetic, and medicinal, and should aim at the general invigoration of the patient and the removal of digestive and other derangements; cold sponging of the whole body every morning, as much out-door exercise as the patient's strength admits of, at the same time avoiding or protecting the face against cold winds, and regular and early hours, are generally necessary. The aim should be to do all that is possible to avoid gastro-intestinal fermentation. The diet should be unstimulating, and where there is the least tendency to indigestion, highly seasoned dishes, pastry, sugar, and indigestible food generally, together with beer, champagne, and the stronger alcoholic drinks, should be avoided altogether, or taken very sparingly. Intestinal disinfectants, such as salol or benzo-naphthol in five-grain doses after meals are often useful. A furred tongue with prominent papillæ and constipation are very often present, and a mixture of soda bicarbonate, nux vomica, glycerine, and dill or peppermint water and (F. 8-10), are very useful. Cascara in some form may be taken separately as required, or saline aperients, seidlitz powders, or mineral aperient waters such as Hunyadi Janos, Apenta water, etc., may be indicated.

When there is anæmia with constipation, which are frequently associated, the elder Startin's mixture of iron and aperients (Mixtures, F. 16), etc., is most useful; or if constipation is absent, tonic mixtures, such as Parrish's food, Easton's or Fellowes's syrup, the mineral acids, and nux vomica (F. 11 and 12), may be suitable. Small doses, \mathfrak{mij} or \mathfrak{miiij} , of liquor arsenicalis, may be given for its tonic rather than for its direct effects on the skin, though it also appears to be directly beneficial in some cases, where the inflammation tends to stop short of suppuration, but it must always be given cautiously, or by upsetting the digestion, it will aggravate the eruption. In the strumous diathesis so often present, cod-liver oil with the syrup of the iodide or other form of iron is essential, and the oil is often advantageous in other cases, as soon as the digestive organs will tolerate it. Of the more direct remedies, sulphide of

calcium, a quarter to half a grain three times a day, is indicated, whenever there is a tendency to free suppuration, and glycerine in half-ounce doses is recommended by Desguin of Antwerp, Bulkley, and Gubler as generally useful in acne.

Locally, when comedones predominate over the inflammatory lesions and the skin is not very delicate, medicated soaps of various kinds are useful. A powerful one I often use is sapon. mollis, spirit. vini rect. āā ʒij, thymol ʒj. Moistened flannel is dipped in the liniment, and then rubbed firmly on where the comedones are most abundant. It is then rinsed off with warm water and calamine lotion painted on if irritation is produced, or a resorcin ointment ʒss to ʒj rubbed in if there is not. There are many medicated soaps in the market of more or less value, especially the Eichoff series, some of which are mentioned in the Formulary in the Appendix, but none better than the above. Hebra's plan, much followed in Germany, was to rub on his spiritus saponatus alkalinus and leave it on. This has a discutient action which is of undoubted value, but disables the patient from his occupation or society, and is seldom practicable in this country, and must be reserved for severe cases when the patient is obliged or is willing to lie up.

The same may be said of the other German discutient treatment with naphthol, resorcin, and sulphur paste. When, however, the patient can be under close supervision, as in a nursing home, it may be usefully employed, as it shortens the time of treatment.

Bathing with water as hot as it can be borne, or holding the face over steam from a bronchitis kettle, or Lee's steam draught inhaler, is a good preliminary to the pressing out of the comedones, which prevents the development of pustules if done gently, but undue force sets up the inflammation that these various methods are designed to avoid. Many instruments have been devised to facilitate their removal, one of the best of which is a modification of Clover's acne presser (fig. 68). The notch is placed over the comedo, and moderate pressure with a shaking motion expresses it. A watch-key may also be used, but the sharp edges make it more painful, and likely to bruise the tissues without great care. Where the comedones are in great numbers, as on the back, curetting is valuable; it cuts off the horny covering of the comedo and facilitates expulsion. For acne of the back, friction with a towel dipped in sea-water

is beneficial. Massage of the face after steaming may be usefully employed in sluggish skins. To get rid of the double comedo, the bridge of skin between them should be divided and the comedo scooped out.

When suppuration has occurred, the earlier the pustule is punctured the less likely is there to be a scar; and even when there is no pus visible on the surface, a deepish puncture of the red papule will generally give exit to a little bead of it mixed with sebum. In *A. indurata*, the incision should be more free, or multiple punctures, followed by bathing with hot water to encourage bleeding, is a good plan. The thickening of the tissues often left by acne induration is absorbed more quickly by the application of Beiersdorf's paroplast. hydrarg. 50 per cent., acid carbolic 7.5 per cent. Leslie Roberts advocates electrolysis to each nodule. After the incision, the puncture should be sterilised either by rubbing in iodoform or eucrophen, or, still better, by syringing out with a 1 in 40 solution of carbolic acid,



Fig. 68.—Clover's acne presser, as modified by myself. The shank is curved near the cup.

using a hypodermic syringe. At first, every fresh tender papule should be done every day; but very soon twice a week, then once a week, will be sufficient. If the patient has the courage and perseverance to go through with this treatment, there is no doubt that bad cases improve more rapidly by it than by any other. Kaposi's lancet is made for the patient's own use, but very few have the knowledge and resolution to use it effectually. Instead of using steady pressure, they give themselves a sudden superficial prick, and fail to evacuate the pus.

Where the knife is dreaded, each nodule may be touched once or twice a week with strong carbolic acid (95 per cent.), or the acid nitrate of mercury diluted 1 to 4; care must be taken in using the acid nitrate of mercury, or scarring will ensue. Another plan (Stelwagon's) is to apply a 1 per cent. to 4 per cent. solution of bichloride of mercury, three times the first day, and every three or four days subsequently. Sulphur in some form is useful in nearly all stages of acne; the precipitated sulphur

may be scented, and applied with a powder puff three or four times a day ; a lotion of ℥ij of sulphur sublimat., æther., spirit. vini and glycerine, with aqua calcis and aq. rosæ, of each ℥iv, may be applied at intervals ; or an ointment of precipitated sulphur ℥j to ℥iv to the ℥j of lard or vaseline ; or a saturated solution of sulphur in vaseline may be used ; hypochloride of sulphur ℥j to the ℥j of benzoated lard, is one of the best, but must be always freshly made, and kept in a stoppered bottle ; sulphide of potassium ℥j to a quart of water is a good, but disagreeable remedy, and is much improved by adding ℥j of tincture of benzoin ; or potassium sulphide and zinc sulphate of each ℥j and aq. rosæ ℥v is a favourite formula in America ; iodide of sulphur gr. 10 to gr. 60 to the ℥j, or sulph. præcip. and alcohol (Hebra), are other forms of using sulphur.

When the hyperæmia is very great, soothing remedies may be necessary at first ; a bismuth or calamine lotion, with a quarter of

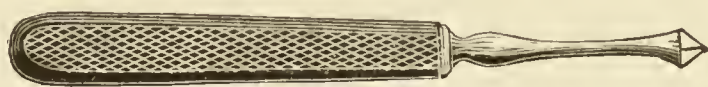


Fig. 69.—Kaposi's acne lancet.

a grain of hyd. bichlor. to the ℥j is good ; this may be used on the day after the more stimulating applications, and partially conceals the eruption in addition to its sedative effect. For obstinate cases of A. indurata, hyd. iod. gr. 2 to gr. 15 to ℥j, or hyd. biniodid. gr. 5 to gr. 20 to ℥j of benzoated lard, may be cautiously applied. These are only samples of a host of local remedies, all more or less useful in properly selected cases.

ACNE ROSACEA.*

Synonyms.—Rosacea ; Bacchia rosacea ; Gutta rosacea ; Gutta rosea ; Acne erythematosæ ; *Fr.*, Acné rosée ; Couperose ; *Ger.*, Kupferrose ; Kupferfinne ; kupfriges Gesicht.

Definition.—A chronic congestion of the face, leading to permanent vascular dilatation, with more or less secondary sebaceous inflammation.

Acne rosacea is a rather common disease, though it does not form more than 2 per cent. of all cases in hospital and 6 per cent.

* Author's Atlas, plate lxxxv., fig. 1. An average case.

in private practice.* It is limited to the face, usually the middle two-thirds of the long diameter, and is of varying intensity, three grades of which may be conveniently distinguished; but all cases do not pass through them, as the condition may be arrested at any point.

Symptoms.—At first, there is simply temporary flushing after meals, exposure to changes of temperature, or, in women perhaps, just before the catamenial period. When this has gone on unrelieved for some time, the face becomes permanently red, and many small vessels become prominent and varicose. The change is limited to the middle two-thirds of the face, affecting the cheeks, nose, chin, middle of the forehead, and occasionally the front part of the scalp in bald people, or to one or more of these regions, but the nose seldom escapes. The border of the redness is ill-defined, the vascularity can be obliterated for a moment by pressure, and the hyperæmia being largely passive, the circulation in the skin vessels is sluggish. When very prominent, there is often seborrhœa nasi; many ducts on the nose are plugged with sebum, imparting to it a greasy feel, and when it has lasted for some time, in spite of its fiery redness, it is often colder than normal to the touch. Distended varicose vessels appear on the sides and tip of the nose and on the cheeks, and the disease may go no further; but more frequently, after a variable time, usually months or years, but sometimes almost simultaneously with the permanent hyperæmia, papules, pustules, or nodules develop, which can generally be shown to have their origin in the sebaceous glands. This constitutes the second stage. In women and in the majority of men, although there are fluctuations, there is no material increase of the disease beyond this stage; but in chronic drinkers, especially if they are also exposed to the weather, *e.g.*, coachmen, there is an increase of connective tissue round the vessels, leading to permanent, intensely red, but non-inflammatory, nodulated thickening of the tip and sides of the nose, expanding it both laterally and longitudinally (**A. hypertrophica**), while in extreme cases these excrescences develop into pendulous stalked tumours (**rhinophyma**), overhanging the mouth and lower parts of the face. These extreme developments are very rare; I have met with one

* Bulkley's statistics in his monograph on acne are 1 in 70 in hospital practice, 6 per cent. in private practice, and about 3 per cent. in hospital and private practice.

as large as a good-sized pear, and they may be larger ; in another case, very large and lobulated, the patient, an alcoholic cabman, said the growths began shortly after being kicked in the face by a horse. Probably some determining factor which interferes with the lymphatic circulation is required, as alcoholic coachmen are common, and rhinophyma is rare. Hans v. Hebra * went further, and regarded it as a disease independent of *A. rosacea*, and saying that it may arise in temperate men and total abstainers. While it may be admitted that alcohol plus exposure is not the only cause, it cannot be disputed that the extreme forms are more frequently met with in chronic alcoholism, and minor degrees of hypertrophic noses are notoriously so, but I have seen a case in an excessive tea-drinker who had been a total abstainer for twenty years.

According to F. Hebra, *A. rosacea* is, in spirit-drinkers, more frequently limited to the nose, and consists of vascular dilatation and seborrhœa ; while in wine-drinkers, the redness is diffuse and seldom limited to one region, and the whole face is bloated ; and in those who affect beer, cyanotic thickening with small nodules and pustules is more frequent. These distinctions are probably fanciful. Another form of hypertrophic *A. rosacea* occurs on the forehead, between the brows in very rare instances. Deep sulci where the natural wrinkles would be, are produced by the thickening of the skin on each side of them simulating the leonine appearance of the nodulated leper. Besnier † records an extreme instance in an alcoholic shoemaker. I have seen a case of moderate degree. A similar condition is met with in the lymphatic form of mycosis fungoides.

In a lady ‡ of thirty-four the disease began as a small patch of vascular papules and pustules over the zygoma, and spread downwards over the whole cheeks in about six months, and twelve months later the whole of the cheeks were swollen purplish-red, and covered with closely-set hemp-seed-sized superficial pustules, with a moderate number of large comedones interspersed. The nose was quite free, but there was a slight degree of it between the brows. The disease began in the summer, and although there was moderate dyspepsia, not enough to account for the condition.

* "Rhinophyma," *Viertelj. f. Derm. u. Syph.*, 1881, Heft iv., with histological plate. It is depicted in F. Hebra's Atlas, Heft vii. Tafel 6, and the case of the cabman is published in my Atlas, plate lxxxv.

† *St. Louis Atlas*, plate vi., fig. 2. ‡ Note Book I., p. 237, private cases.

Great improvement was affected by scarification. I have had a similar case also in a lady of thirty.

Rosacea acuminata is the name I venture to give to a hitherto undescribed variety of eruption of the face. It is rare, but I have now notes of seven cases, and the papular elements are, I believe, seated in the sweat pore area, though I have no anatomical proof of this. It consists of minute or pin's-head convex red papules, most abundant on the cheeks, but they may also occur on the forehead, and lower part of the face. A sero-pustular apex is sometimes present on the papules. The papules may be sparse or numerous, but are not grouped in any way—general congestion of the face is not usually present.

All but one occurred in young ladies' between twenty-one and thirty-five, and although flushing after meals and other dyspeptic symptoms were present in a slight degree in the majority, I think dyspepsia played only a small part in the etiology. In two there was a strong probability of its having been excited by chills after being hot. Exposure to cold winds, and fire or sun heat, always aggravated the eruption. One lady, æt. sixty-two, had it associated with marked dyspepsia and rosacea, but, as in all the rest, the nose was spared. Ichthyol $\mathfrak{m}\mathfrak{v}$ ter die succeeded in most of the cases, in removing the eruption, sometimes after other treatment had been tried and failed; but all the cases ran a slow course, with a tendency to recur after exposure to sun or wind. Fox and Galloway have shown cases at the Dermatological Society, and Fox recommended sulphur ointment gr. xx to the $\mathfrak{z}\mathfrak{j}$, which was used successfully in Galloway's case.

Etiology.—The disease is seen much more frequently in women than in men (five to one), but the difference diminishes after forty years of age. The age of onset, for the bulk of the cases, is over twenty-five years, beginning, in fact, at the age when *A. vulgaris* is ceasing to appear. The extremes I have met with are, sixteen years in a female and seventy-two years in a male, and Bulkley met with one æt. fourteen years and another æt. eighty-four. Comby,* however, breaks the record with a rickety child of three, whose parents quenched his frequent thirst with cider and water. A red nose from chronic passive hyperæmia, due to a feeble heart, may occur in quite young children.

* *Le Rachitisme*, p. 123 (Paris : 1892).

The main cause for both sexes is disorder of the alimentary canal, chiefly associated with the range of symptoms included under dyspepsia ; flushing after meals, constipation, and lithæmia being among the commonest symptoms. In women also, uterine disorder is a common cause, and even when there is no apparent uterine trouble, the eruption is generally worse just before a period. A feeble circulation and exposure to inclement weather, or vital depression from illness, overwork, anxiety, etc., strongly predispose to the eruption, or aggravate it, if already present. Excess in alcohol in any form especially favours the development of the worst forms of the disease, and occasionally it appears to be due to local irritants, *e.g.*, ill-advised cosmetics.

Redness, thickening, and dilated venules may also be produced in the nose, by the chronic pustular folliculitis within the nostrils to which some persons are liable.

Rhinophyma occurs almost exclusively in men, but a case was shown at Mr. Hutchinson's museum in a woman, *æt.* fifty-one. On the tip of her nose was a tomato-sized tumour only a little redder than normal, smaller growths on the *alæ nasi*, and a flat florin-sized one on the chin, which had commenced twenty-five years before, while the nasal tumours had been present only ten years. She had suffered from dyspepsia and flushing from the age of eighteen, but not from pustules ; she was not addicted to alcohol.

Pathology.—The first change appears to be congestion, beginning in the deeper vascular layer of the corium, but afterwards affecting all the vessels. This congestion, generally of reflex origin, but sometimes from a direct irritation, is followed by secondary seborrhœa or inflammation in the sebaceous glands, and perhaps other parts of the skin, producing sooner or later papules, pustules, or nodules, and ultimately parietic changes occur in the walls of the vessels, which become permanently dilated, thickened, and perhaps even new vessels form. In the hypertrophic cases, there is a formation of new connective tissue round the vessels, and the rhinophymata are mainly composed of enlarged sebaceous glands and connective tissue. This makes the disease primarily a vaso-motor reflex neurosis, while Schwimmer regarded it as a tropho-neurosis, on what appears to me to be inadequate grounds. Unna claims it to be another manifestation of the seborrhœic process, a sequence of seborrhœic

eczema, although he admits that it differs from all other seborrhœic processes. The nodules he ascribes to a special folliculitis, but his statements on the question are not convincing to me.

Other theories have also been advanced, but do not fit the facts so well as the above.

Anatomy.—G. Simon examined a nodule from a drunkard's nose, and found that it consisted of connective tissue, traversed by enlarged vessels. The sebaceous glands were also enlarged, and filled with hardened sebum. He regarded the other changes as secondary to those of the sebaceous glands. Piffard examined a tumour weighing an ounce, and found that it consisted of connective tissue, with thickening of the rete and enlargement of the papillæ. The sebaceous glands were degenerated where they were pressed upon by fibrous tissue, but not otherwise changed. On the other hand, Hans v. Hebra found in hypertrophic acne a connective tissue new growth with numerous dilated and new vessels, the sebaceous glands numerous and enlarged, due, he considered, to the fibrous tissue cutting off some of the acini from the rest of the gland; and as secretion continued in these detached portions, the glands multiplied, while the retained sebum irritated the surrounding tissue to fresh growth. Rokitansky also found a large tumour to be entirely composed of fibrous tissue, containing large vessels, with no sebaceous changes. In my own case, the sebaceous glands were very abundant and conspicuous.

Diagnosis.—The age of the patient at the onset of the disease, the history of flushing after meals, alcohol, or exposure to changes of temperature, etc., the obvious vascular dilatation, the special distribution in the middle two-thirds of the face, and the symmetry* of the eruption, the papules and pustules following, not preceding the other symptoms, and the slow development of the disease, are its most diagnostic features, and distinguish it from *A. vulgaris*, in which there are comedones and no general redness, while the eruption is chiefly on the sides of the face, and often on the trunk as well.

Erythematous eczema is much more acute in onset and development, is not limited to the middle of the face, desquamates from the beginning, and is associated with irritation; nor are there the pustules of *A. rosacea*.

In *erythematous lupus*, the surface is generally scaly, often with

* In an express-train engine-driver, this law of symmetry was curiously broken through by his occupation. The left side of the face, which was always on the outer side as he stood on the engine, was badly affected, while the right protected side was free from eruption.

scarring, more projecting than the hyperæmic stage of acne, more defined and raised at the age, and lacks the nodules of the hypertrophic stage of rosacea. At the same time, in the early stage of acne, the sebaceous accumulation in the follicles may lead to mistakes, if all the features are not taken into consideration.

Some cases of *superficial nodular syphilides* are very like A. rosacea, but being a tertiary condition, the syphilide is not symmetrical, very likely to ulcerate, more rapid in development, and the border more defined; it varies less with the surrounding conditions, and lacks the telangiectases of A. rosacea, in which also there are no ulcers, crusts, or cicatrices. Evidence of past syphilitic lesions can generally be found elsewhere in the case of a nodular syphilide. The possibility of mixed conditions must, however, always be borne in mind in a chronic disease like A. rosacea, as of course it does not exempt from other eruptions. Thus I have seen iodide acne associated—a puzzling combination suggestive of syphilis. The localisation was a guide to the rosacea, and the free suppuration to the iodic eruption.

Prognosis.—Considerable relief can generally be afforded, and often complete removal of the eruption can be effected, with care and perseverance on the part both of patient and physician, in cases of the first and second degree, but the return of the eruption can only be avoided by the removal of the cause and avoidance of the known conditions which favour the disease. Surgical procedures may also do much for the hypertrophic cases.

Treatment.—The line of internal treatment is determined by the general health. Careful attention to the digestion is of primary importance in most cases; the diet should be regulated; alcohol is generally better avoided entirely, unless in very small quantities in atonic dyspepsia at the beginning of a meal; beer, stout, and effervescing and acid wines are generally particularly injurious; fermentable articles of diet should be avoided, such as sweets, pastry, rich gravies, thick soups, etc., and generally plainly cooked, easily digestible food should be chosen; tea and coffee are often, but not necessarily, injurious, and those kinds of cocoa in which the superfluous fat is removed, are preferable to the cruder or starchy kinds. Cold winds, or any great alternations of temperature, should also be guarded against. Medicinally, alkalies, or where there is irritative dyspepsia, bismuth and bitter tonics, e.g., gentian, cascarilla, nux vomica (Mixtures, F. 8—12), etc., are the

kinds of drugs suitable to most cases, but in atony of the stomach, the mineral acids often agree better ; if there is a gouty tendency, potash is preferable to soda, and Bulkley speaks highly of acetate of potash in dyspepsia with acidity. Constipation must always be combated by such treatment as is recommended under eczema for that condition. In women, the uterine and catamenial functions should be inquired into ; but not infrequently, these troubles are secondary to defects in the general health, and subside when these are rectified. On the other hand, the dyspepsia, debility, etc., may be due to the exhausting effects of leucorrhœa, menorrhagia, etc. Direct remedies are seldom of much use ; arsenic is seldom beneficial, and generally injurious, except in drop doses for drunkard's catarrh of the stomach ; ergot is said sometimes to be of service in contracting the dilated vessels, but as these are veins this is very doubtful. Unna claims that ichthyol, in doses of 3 to 5 minims, made into a pill and taken three times a day, does all that is required. It certainly suits some cases, but aggravates others, especially where dyspeptic symptoms are prominent, and, in my opinion, a carefully planned treatment founded on general principles is the most reliable. In rosacea acuminata, however, ichthyol is most efficacious.

Local treatment is of great service in this, as well as the other form of acne. The papules and pustules may be treated with sulphur compounds, as in *A. vulgaris*, the unguent. sulph. hypochloridi (Ointments, F. 19) being one of the best ; a 5 to 10 per cent. ichthyol ointment is a favourite with many ; or resorcin ʒss ; cremor frigid. or vaseline ʒj may be used, and has the advantage of not being a disagreeable application ; or in obstinate cases Vleminckx's solution, 1 part to 4 or 5 of water (Parasiticides, F. 11), applied at night, and in the daytime more soothing applications, such as calmine and bismuth lotion (Lotions, F. 41, 42). For the permanently dilated and varicose vessels, the best plan of all, and leaving least mark, is electrolysis, in the same way as that for the removal of superfluous hairs, but a weaker current must be used—three to five cells is sufficient. Of course the cause must be removed, or other vessels will enlarge. This has in my hands entirely superseded the older plan of multiple scarification, splitting up the larger vessels, or superficial cauterisation with Paquelin's cauteries. Multiple scarification is, however, very valuable in the hypertrophic forms without actual

tumours, also in the exceptional cases where innumerable pustules are aggregated together. Europhen or similar microbicides should be rubbed into the incisions. For the red nose due to seborrhœa nasi the treatment has been described under that for seborrhœa. A modification of scarification is proposed by Lassar for red noses. Forty gilt needle-points are fixed in a disc, and this connected with an electromotor similar to that used by dentists for stopping teeth. By this means hundreds of pricks are made in the skin in a short time with abundant hæmorrhage, which can be stopped at will by pressure. It is chiefly useful where there is redness without the presence of visibly dilated vessels, which could be dealt with by electrolysis.

Nodulated noses may be trimmed with a knife down to their normal size; cicatrization takes place readily, and the result is usually very satisfactory. Large tumours must be removed by the usual surgical methods. Veiel recommends cataplasms and painting once daily, with a 2 per cent. alcoholic solution of pyrogallic acid for the nodulo-pustular thickened noses, or the application of emplastrum cinereum. Few English patients will submit to these applications, as the method is tedious and increases the disfigurement for the time being.

ACNE VARIOLIFORMIS.*

Synonyms.—Acne frontalis; Acne atrophica (Bulkley and Bazin); Acne necrotica (C. Boeck); Acne rodens (Vidal and Leloir).

Definition.—A pustular folliculitis, which predominates on the upper part of the face and on the scalp, and leaves scars like those of small-pox.

The term “acné varioliforme” was originally given by Bazin to molluscum contagiosum, but acne varioliformis was adopted by Hebra and his followers for the somewhat rare eruption ($1\frac{1}{2}$ per 1000) under consideration, in which sense it is now always employed.

Symptoms.—It occurs usually in the centre of the forehead,

* *Literature.*—Author's Atlas, plate lxxxvi., illustrating the disease on the scalp, face, and trunk. Neumann's Atlas, plate iii., shows an eruption disseminated over the whole face, but this is unusual. It is the same case as that published by Pick, which Dubreuilh identified as hidradenitis. *Vide* Acne Agminata.

on the sides of the temples, at the margin of the hairy scalp, and on the scalp itself, both at the temples and the vertex; it is seen less frequently on the sides and other parts of the face and neck. In two of my cases, it was also on the chest, and in one on the scrotum and on the back. The face, scalp, or both were affected as well in all. In a case of Isaac's shown at the Berlin Dermatological Society, the lesions were on the extremities only, but probably, like Bronson's case, it was really a folliclis.

It consists of indolent, red, flat papules or nodules, about the size of a hemp seed, rather firm at first, but later suppurating at the apex, and drying up into small, flat closely adherent scabs, which press into the skin, and when they fall off, leave a pit about one-eighth of an inch in diameter (occasionally much larger), at first stained dark red, passing into a brownish hue, and subsequently blanching and looking like a small-pox scar; hence the name *varioliformis*. They are massed together, but without definite grouping, in the temples and hair margin of the forehead, while in other parts of the head and trunk they are irregularly disseminated.

The earliest lesion is a convex papule, with minute pin's-point, hard centre, apparently cornified epithelium. When a little larger, a ring of pus or sero-pus, and outside this a narrow red ring, surrounds the horny-looking centre, which has also *pari passu* enlarged until it assumes the appearance of a distinct scab. The eruption is painless, but itches slightly at times. It is very chronic, and tends to recur sooner or later, some of my cases having a history of ten years' intermittent duration, and two nearly thirty years.

A milder form occurs in which the lesions are more superficial, from a pin's head to a millet seed in size, and the apex has a small scab, which, when removed, only leaves an excoriation. They may be very numerous over the head and face, but being superficial leave no scars, or only a small transitory one. The larger, more characteristic lesions are sometimes sparsely present as well. Oily seborrhœa invariably precedes and accompanies the disease, and according to Sabouraud there can be no acne *varioliformis* without an oily seborrhœic foundation.

Etiology.—It occurs both in men and women generally over thirty, but I have seen it under twenty-five years of age, and one

case was said to date from vaccination in infancy, but this is improbable. Its predisposing cause, if Sabouraud is correct, is oily seborrhœa. In eighteen cases which I have examined, eight were males, ten females; three had had syphilis, three gonorrhœa, and twelve neither. Their ages varied from twenty-one to seventy.

Fordyce suggests on good grounds that as it is an affection chiefly of the poor, and its localisation is on the forehead and scalp, where pressure from dirty head coverings would occur, a microbic infection is probable. How that produces it is now to be detailed.

Pathology.—The first step appears to be a minute horny plug, which sets up inflammation and necrotic destruction, and separation of the portion of the skin affected.

Anatomy.—Microscopic examination of excised papules has been made by Touton, Fordyce, and Sabouraud. Fordyce found that the papules in the early stage were in the derma round the hair follicles; Touton also found them in the middle and upper part of the corium. The first changes were dense round-celled infiltration round the hair follicles, generally above the sebaceous glands, which might or might not become involved. The infiltration extended laterally and upwards, involving the papillary and sub-papillary layers, the walls of the follicle, and the epidermis; these finally became disintegrated and destroyed, though the lower part of the follicle and the sebaceous glands often escaped complete destruction.

Fordyce* found enormous numbers of staphylococci in the lymph vessels and free in the tissues. He thought that their number, distribution, and appearance before the lesion had involved the epidermis rendered their etiological relationship very probable. Touton† found staphylococcus, tetracoccus, and a short thick bacillus chiefly in the upper layers of the crust and round the orifices of the hair follicles, and he therefore regards their presence as secondary. In Fordyce's second case, a more advanced lesion, he found no organisms.

Dubreuilh‡ disputes its pilo-sebaceous origin; the follicles, he says, traverse the lesion but are not central, and the inflammation extends into the infundibulum, but not beyond it. The suppura-

* Fordyce, *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. xii. (1894), p. 152.

† Abs. of Touton's paper, *Brit. Jour. Derm.*, vol. iv. (1892), p. 265.

‡ Dubreuilh, *Archives cliniques de Bordeaux*, 1894. *Résumé, Annales de Derm. et de Syph.*, vol. v. (1894), p. 956.

tion when present is due to the elimination of the necrotic focus, which is cone-shaped, with the base at the surface.

If, however, Sabouraud's* lucid description is correct, all difficulties and doubts vanish. He says the first step is the invasion of the follicle by the seborrhœic micro-bacillus, and the irritation of the epidermis by their presence in the upper third of the follicle, which produces encystment into a cocoon with concentric horny cells. Thus, then, is the central horny plug produced; as a consequence, there is progressive atrophy of the hair, hypertrophy of the sebaceous gland, and an oily seborrhœa. Before acne varioliformis can be produced this lesion must be invaded by the staphylococcus aureus, which gets in by the side of the horny plug, and abundant leucocytes are effused all round and set up an inflammatory œdema which clinically is the sero-pustular circle (serous, Sabouraud says). The leucocytes infiltrate the connective tissue till they produce a slough, which is separated in due course.

This makes it all so beautifully clear that it ought to be true. It is strange, however, that, while the conjunction of two such very common organisms is all that is required, yet the disease should be so rare, and that, unlike acne vulgaris, it is very rare amongst the well-to-do.

Diagnosis.—The characteristic features of this eruption are, that the lesion is flat with a necrotic deep-seated scab in the centre which leaves varioliform scars, occurs on the temples and forehead, and goes back into the hairy scalp. The last point will distinguish it from all other forms of *acne*, which do not affect the scalp.

It has been confused with *acne agminata*, and its diagnosis is given under that affection.

It is somewhat like the *corymbose papular syphilide*, but this is always a secondary eruption, and widely spread over the rest of the body. A syphilide like *A. varioliformis* belongs to the late tertiary period, and is rarely seen anywhere except on the head and neck.

Prognosis.—It is almost sure to recur sooner or later.

Treatment.—In my experience, the majority of cases improve under iodide of potassium, but some do better with iron; from

* "L'Acné Nécrotique," *Annales de Derm.*, vol. x. (1899), p. 841, illustrated; and *Les Maladies Seborrhéiques*, p. 86. (Masson et Cie., 1902.)

fifteen to twenty-five minims of the perchloride should be given three times a day. Improvement soon results, and I have cured cases with this alone using no local treatment. Prolonged treatment is required for complete removal of the eruption, and if evidence of a syphilitic taint be obtained, a mild mercurial course, alternating with the iodide, should be continued for at least a year. In one case, after seven years' duration, the persistent use of iodide of potassium and iron apparently produced a cure, the disease not having recurred during the last ten years. Locally, mild mercurial applications, such as the diluted nitrate or ammoniated mercury ointment, should be frequently smeared on, and this is enough to remove the lesions actually present. Probably, if the horny centre of the early papule were removed and iodoform or other antiseptic applied, abortion of the lesion would be induced, and so the scar avoided. Most of the lesions are in an advanced stage before the patient applies for relief. If, however, Sabouraud's views are accepted, then obviously the seborrhœa is the condition to treat in order to avoid recurrences, and internal medicines will be superfluous. (*Vide* Seborrhœa.)

Acne Scrofulosorum is a rare affection which occurs chiefly in young children though Bazin is said to have described a case in a boy of seventeen years. Of this I was unaware when I called attention to the affection, relating three cases at the International Dermatological Congress in Vienna in 1892.* Since then an article has been written by Colcott Fox and several cases have been exhibited at the London and Paris Dermatological Societies. The most characteristic seat are the buttocks and backs of the thighs, but any part of the lower extremities may be attacked, and the extensor aspect, less often the flexor aspect, of the arms and forearm; and the sides of the face in some cases. The trunk, in this form, is seldom involved† higher than the loins. The eruption consists of pin's-head to hemp-seed-sized lesions for the most part, but a few attain to the size of a small pea. They consist of small pustules on a highly inflamed, often livid red base, but the lesion is only

* "Acne Scrofulosa," *Rep. of Inter. Cong. Derm. Wien.* (1893), p. 510.

† *Brit. Jour. Derm.*, vol. vii. (1895), p. 341, with coloured plates; also vol. vii. (1894), p. 294, Jamieson's two cases of impetigo varioliformis, which he admits are acne scrofulosorum.

moderately firm, not so hard as ordinary acne and evidently seated at the hair follicle. They do not itch.

The eruption comes out in crops a few at a time, the older ones undergoing absorption and leaving purplish stains, but they seldom leave scars, as they are quite superficial for the most part, but occasionally they extend both laterally and vertically and produce deeper ulcerating lesions, as in Galloway's and Hallopeau's cases. On the other hand, a milder form than usual may occur, as in one of my cases, a boy, æt. four, in whom the eruption was a sequela of measles and consisted of pin's-point to pin's-head papules, and only some of the larger ones presented a minute vesiculo-pustular cap. The smaller ones had horny plugs in the centre.

Fox and Galloway* examined lesions microscopically, and found no evidence of tubercular structure and no bacilli in guinea-pig and rabbit inoculations. The inference is that it is certainly not directly tuberculous, but may be due either to tuberculous toxin or to some other toxin favoured by the tuberculous predisposition.

In almost all of the cases, there is distinct evidence of tuberculous manifestations in the shape of enlarged glands, ulceration of the cornea, etc., together with a family history of phthisis, and the patients are nearly all infants or young children, but a few have been adolescents. A sub-variety of this condition is seen in the more or less abundant acne pustules which appear chiefly on the trunk in some cases of lichen scrofulosorum. Epithelial occlusion of the gland orifices is probably the proximate cause in these cases, and perhaps in the others also.

The treatment is to administer cod-liver oil in full doses with iron and rub in a resorcin or sulphur ointment of about ten grains to the ounce. The eruption responds favourably to these measures, in a short time.

Acne Keratosa. † I have differentiated under this title a rare form of acne of which I have met with four cases in women, and a fifth case in a man of a somewhat different character.

As the case usually presents itself to the observer, there are finger-nail-sized, well-defined, excoriated patches covered with

* *Brit. Jour. Derm.*, vol. ix. (1897), p. 273.

† *Brit. Jour. Derm.*, vol. xi. (1899), p. 1.

hard blood-stained crusts situated on the cheeks and chin, especially near the angles of the mouth. There are also numerous scars of old lesions of the same size and shape as the earlier ones, white to red in colour according to their duration. The lesions, as a whole, are symmetrical, taking all the stages together, but they come out singly or in very small numbers at irregular intervals, and are very persistent. They commence as a red, firm, tender lump, on which a pustule usually forms and dries into a scab, or the epidermis is detached by the underlying lymph. The patient removes the scab from an irresistible desire to squeeze or pick out soft or horny, conical-like plugs about a twelfth of an inch long, which are imbedded in the skin, and give rise to great irritation, and sometimes pain and tenderness, until they are removed; sometimes there is only one plug, but there may be several. When they have been extracted the sore heals slowly, the whole process taking from weeks to months, and with a tendency to recur in the same place, if all the horny plugs are not out, and in some instances to spread slightly at the periphery.

More frequently a fresh lesion appears near the old one, generally followed at a varying interval by a corresponding one on the opposite side; thus the disease is kept up for years, in one case forty years slightly controlled by treatment but never cured. The horny plugs, which were examined by Jamieson and myself, were about the size of the end of a tin-tack, and composed of epithelial horny cells with a few prickly cells and cell nests. Jamieson compared them to the comedo, and thought they were derived from the sebaceous glands, but it appears to me that they are from the hair follicle itself.

The etiological factors are rather scanty, one case was apparently traceable to the direct effect of exposure to severe cold. The first and the two last cases had probably developed from acne vulgaris. In all of them digestive disturbances were present, and in three they were very prominent. All four cases were women in comfortable circumstances; one was probably a cocain-taker.

The cases differ from the excoriated acne of Brocq* which is seen sometimes in young girls, and is due, he thinks, entirely to a morbid or hysterical impulse to pick the spots apart from irritation. I think, however, that these cases really itch severely.

* "L'Acne excoriée des jeunes filles," Brocq. (Paris: Charles Schlaeher, 1898.)

In one of his cases also the eyebrows were picked out—"Trichoptilimania," as Hallopeau calls it. These excoriations are much smaller than in the disease just described, and there are no horny plugs to remove. I regard it as an acne vulgaris with pruritus, and not as a merely hysterical manifestation. My A. keratosa cases varied from thirty-one to sixty-four years of age, and were all very rebellious to treatment and had lasted for years. The measures that gave most relief were those directed to improving digestion, and locally mild antiseptics of the iodoform and boric acid class. I think Kaposi's * *Acne urticata* is a somewhat similar affection to the one I am describing, only he has not described the "horny plugs" which characterise A. keratosa, and he speaks of it as attacking the limbs. Like mine, his cases were of long duration—fifteen or twenty years, he said. As in my cases, the patients are impelled to scratch or pierce them, and then squeeze them to get temporary relief by getting blood or serum out of them. They begin as pale red, wheal-like, hard elevations from a bean to a shilling in size.

My fifth case in a male is as follows:—

Nathan, J., æt. 25, a tailor, first seen in January, 1885, had suffered from an eruption off and on for two years. It was situated about the nose, cheeks, and forehead, the sides and front of the neck, the extensor aspect of the forearm, wrists, hands and fingers, on the side of the forefinger, on the front and back of the thighs, but there were no lesions below the knees. The distribution was evidently where the hair follicles were most abundant, but also in a few parts where the hair follicles were doubtfully present; three or four lesions at a time came out in various places, but were not grouped.

The eruption consisted of indolent, inflammatory, very firm, conical papules, from one-sixteenth to a quarter of an inch in diameter, in the centre of which was a nail-like plug of ordinary epithelium, which left rather a deep hole when picked out; some of these suppurated, forming a small pustule on a conical red base, which only took a day or two to form, but after the pustule was ruptured the inflamed base remained unchanged for weeks. When first formed it was only a pin's-head-sized, slightly red papule with a small horny plug, but both the plug and base increased in diameter, and it was not until the whole was a quarter of an inch in size that suppuration took place, and then only in certain lesions. Each lesion was very slow in its course, but ultimately the induration was absorbed, leaving scarring and pigmentation in some places. Subsequently some of the lesions on the face enlarged to half an inch in diameter, forming much-inflamed, indurated, raised nodules with a flattish top, which softened in the centre, almost like a carbuncle, but the central mass was slow in separating. The general health was good;

* Kaposi, Amer. Edit., p. 372.

the patient was badly marked with small-pox, but there was no evidence of syphilis, and specific, and, indeed, all other treatment, had no effect on the development or number of the lesions. Some years later I traced him out, and found that he had completely recovered, but not from any special treatment. When first shown to the Dermatological Society, no one except Hutchinson had seen a similar case, which was equally obstinate. Elliot's case was probably one of this kind.

The main differences are, the much wider distribution, and, for a long period, the formation of lesions round a single plug instead of multiple horny nail-like plugs, and the lesions being more distinctly raised and the plugs obvious, but these differences seem scarcely sufficient to justify one in considering the disease to be distinct from that of the ladies', and it is probably only a variant of it.

The pathology would appear to be that horny cells, derived in all probability from the lining of the hair follicle, are aggregated into a horny peg, which by its presence in the mouth of the follicle acts as an irritant, and an inflammation round it is set up, just as it is round a comedo, but the whole process is much more indolent, and the plugs are multiple instead of single.

Acné sebacée cornée is a French synonym for lichen pilaris or spinulosus. Cases have recently been described by Tenneson* and Hallopeau† as a new affection with horny spicules. Tenneson calls his acné kératique, and considers it different from Hallopeau's acné corneé. From their description I am unable to distinguish any important difference from lichen pilaris.

Acne necrotisans et exulcerans serpiginosa nasi is the lengthy appellation given by Kaposi to a rare affection of which he has observed three cases, two men and one woman, in middle life. I transcribe Kaposi's own words (p. 373 of the American translation of his lectures):

"It occurs as an acute eruption on the tip of the nose, in which flabby papules, as large as a pin's head or a little larger, developed; these rapidly underwent purulent or necrotic degeneration, resulting finally in numerous deep scars. A dense row of new papules running the same course then developed at the margin, and this continued until within a few weeks or

* *Jour. Cut. and Gen. Ur. Dis.*, vol. xii. (1894), p. 362.

† *Ann. de Derm. et de Syph.*, vol. vi. (1895), pp. 285, 305, and 1141.

months; the cutaneous part of the nose was destroyed by the deep cicatrices. Even after scraping out the papular wall formed by the new eruption around the cicatricial part, relapses still continued, until the process stopped at the level of the bony part of the nose. The curetted tissue proved to be vascular, flabby, granulation masses with numerous giant cells." *

There was great resemblance to syphilis pustulosa, except that the papules were very flabby and vascular, while their original size and prominence, their rapid development and destruction, excluded lupus vulgaris.

A very similar condition is recorded by Leslie Roberts † under folliculitis necrotica, and Wilhelm showed a case at the Vienna Dermatological Society. A similar development of vascular granulation tissue at the follicle followed by necrosis occurred in Lukasiewicz's case ‡ of folliculitis exulcerans, also from Kaposi's clinic, but this was on the nates and limbs of an anæmic girl during nearly three years. They occurred in large numbers in patches which extended peripherally from a crown to palm size. Cure was effected by the repeated application of the thermo-cautery. This is perhaps a similar process to the depilating folliculitis of the limbs described by Arnozan in middle-aged and elderly people.

Kaposi gave the name of **Acne telangiectodes** § to a case with non-suppurating spongy vascular papules throughout the face, mingled with ordinary acne. Curetting cured it. It is probably *Acne agminata*.

ACNE AGMINATA. ||

Synonyms.—Disseminated follicular lupus (Tilbury Fox); *Acne telangiectodes* (Kaposi); *Acnitis* (Barthélemy).

This is a still rarer affection than folliclis, and was first described by Tilbury Fox in 1878, from three cases which he regarded as a form of lupus, as will presently be shown. I

* "Ueber einige ungewöhnliche Formen von Acne," Kaposi, *Archiv f. Derm. u. Syph.*, vol. xxvi. (1894), p. 82, with coloured plate, repeated in plate ix. of his Hand Atlas.

† *Brit. Jour. Derm.*, vol. ix. (1897), p. 179.

‡ Reports in *Annales de Derm. et de Syph.*, vol. x. (1898), p. 1065.

§ *Loc. cit. of Archiv*, and plates vii. and viii. of Kaposi's Hand Atlas.

|| *Literature.*—Tilbury Fox, *Lancet*, July 13th and 20th, 1878, pp. 35

think it is identical with Barthélemy's acnitis, but not with folliclis. Cases have been shown at the London Dermatological Society by Perry (2), Galloway and myself (2).

Symptoms.—The eruption is for the most part confined to the face, but the limbs may be affected. The most striking feature in a well-marked case is the tendency of the lesions to group about the chin, cheeks below the orbit, the brows, the temples, the upper lip, and the lower eyelids, while there are also scattered lesions on the sides of the face and other parts, and a very few on the nose. In one of my cases, it was limited to the eyelids, chiefly the lower. The individual lesions vary from a pin's head to a hemp seed as a rule, occasionally a little larger. They are mostly of a uniform dull brownish-red tint, but some of them have a yellow central point, with or without a comedo; in one of my cases, there were many with comedones in them, but the great bulk were not connected with the sebaceous glands. A large proportion contained pus even when they appeared to be solid, but in other cases they have been firmer, and nothing but blood came out when they were pressed. In a few instances, two or three lesions had coalesced into an oblong nodular patch which had the lupoid aspect which struck Tilbury Fox so much. The general aspect is that of an acne for the large discrete lesions, but the smaller ones are less inflammatory and have a glistening waxy aspect, the grouping also is a distinguishing feature.

In some cases, the spots involute with or without suppuration, and leave a small brownish pigmented scar, but as a whole the eruption is very indolent and persistent, quite unaffected by the ordinary acne treatment, and scarcely changes at all except as regards vascularity. Perry's case, however, cleared off rather rapidly when involution once set in, and not, I believe, as the result of treatment.

In neither Fox's, Perry's, nor Galloway's cases were there any lesions in other parts of the body, but in two of my cases there were a few scattered lesions on the forearms; they were pale red, hemp-seed-sized, firm, and more deeply seated than those on the face, and 75. Barthélemy, *Annales de Derm.*, vol. ii. (1891), p. 1, with good coloured plate, "De l'Acnitis;" as "Acné nodulaire," he had previously described a case in the *Annales* of 1881. Kaposi, Hand Atlas, plate vii., Acne telangiectodes, an extreme case. Pick, "Acne Frontalis seu Varioliformis," *Archiv f. Derm. u. Syph.*, vol. xxi. (1889), p. 551, coloured plate of the face, but it also attacked the backs of the hands and the forearms.

and did not suppurate. There were a few papules on the neck, and one on the rim of each ear.

The course appeared to be first the development of a small shot-like lesion under the skin, to be felt but not seen, then slight enlargement, implication, and reddening of the skin, and ultimately it projected above it as already described. There was, however, very little tendency to break down spontaneously and discharge,

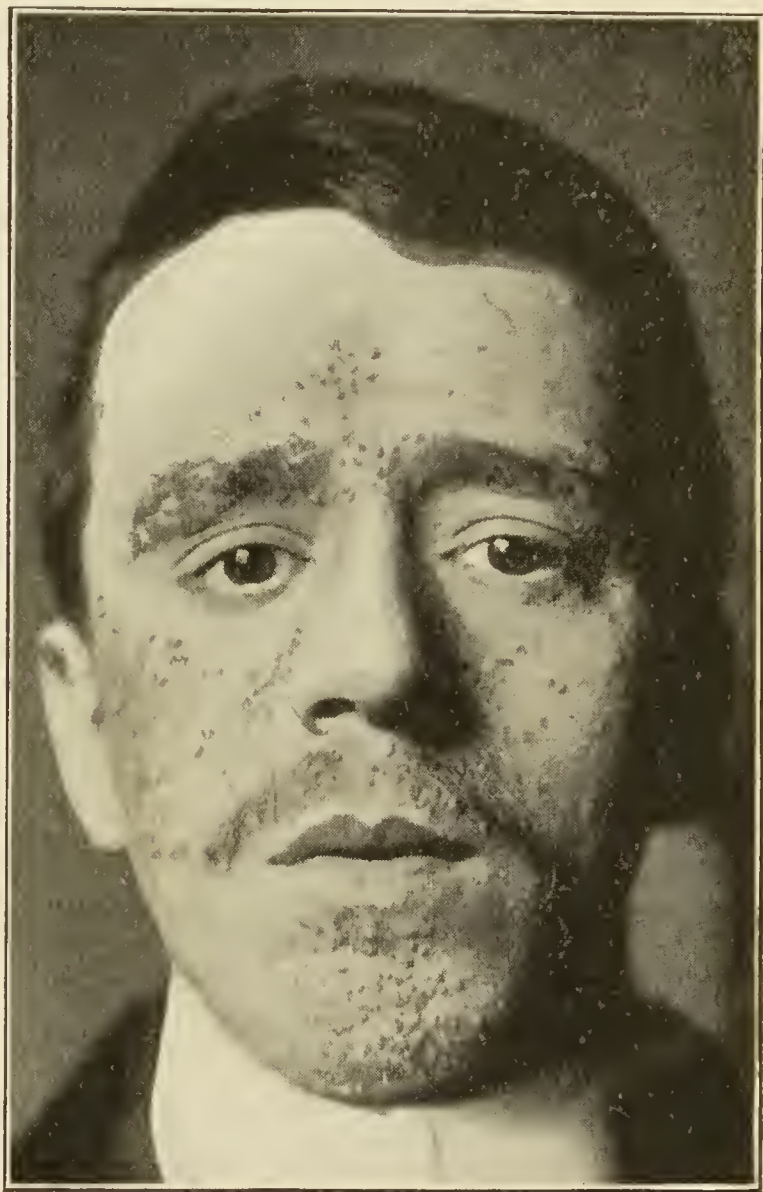


Fig. 70.—Acne agminata.

and form a scab adherent until healing took place, nor could I trace that each lesion completed its course in two to six weeks, as Barthélemy describes in acnitis, but if the lesion disappeared spontaneously or by treatment, a pigmented depression was left. In other respects, the disease closely corresponded with acnitis, and the distribution was very like fig. 1 of his 1891 paper, only the lesions were more distinctly in crowded groups. If I am right in considering that the resemblances outweigh the differences, and identifying this disease with acnitis, I think, as far as my experience goes, Barthélemy is right in keeping it separate from

folliclis. For the diagnosis from this, see Folliclis. In two of my cases, there was no evidence of tuberculosis either in the patient or his family, but in a third the family history was very bad.

Pathology.—Tilbury Fox* regarded the dense cell infiltration throughout the corium permeating between the fibres, very thick in the papillary layer and round the hair follicle, and partly in the sebaceous glands, as a proof of its lupus character. Barthélemy considers the affection the result of auto-intoxication from intestinal absorption, and thinks dilatation of the stomach is a frequent concomitant.

Darier found in one of Barthélemy's cases epithelioid and giant cells localised round the pilo-sebaceous follicles. Barthélemy himself found all the constituent elements of the skin involved, and could not determine any point of departure from any one of them. The fact that the mucous membrane of the mouth may be involved negatives the sweat coils as the only point of departure.

Galloway examined a nodule from the eyelid of one of my cases, and found abundant giant cells, and a general aspect of tubercular structure, but no tubercle bacilli were discovered.

Pernet† examined a nodule from the cheek of the case of fig. 70, and found that the primary and chief change occurred about the sweat coils, which were disorganised by an inflammatory leucocytic infiltration. Some of the hair follicles were partially involved, and there was perivascular infiltration. No tubercle bacilli were found.

The treatment is given under "Folliclis."

FOLLICLIS (Barthélemy).‡

Synonyms.—Lupus Erythémateux disséminé (Boeck); Folliculites disséminées symétriques des parties glabres à tendance cicatricielle (Brocq); Acne varioliformis of the extremities (Bronson); Folliculitis exulcerans (Lukasiewicz); Hidradenitis destruens suppurativa (Pollitzer); Idrosadénite

* The microscopic drawing illustrating his paper was taken from sections made by myself from a papule excised from above the upper lip, and at the time I regarded the lesion as of an adenoid structure.

† *Brit. Jour. Derm.* vol. xiv. (1902), p. 131. The clinical account is at p. 18 of the same volume.

‡ *Illustrated* by Barthélemy, "De l'Acnitis," *Annales de Derm.*, vol. ii. (1891), p. 1.; coloured plate i., fig. 3, represents elbow. Hallopeau and Leredde, plate

suppurative disséminée (Dubreuilh): Scrofulides nodulaires disséminées (Dubreuilh's Handbook); Spiradenitis suppurativa disseminata (Unna); Tuberculides (Darier); Granulome innominé (Tenneson); Folliculites tuberculeuses (Kracht); Tuberculides acnéiformes et nécrotiques (Hallopeau, Balzer, and Leroy); Toxi-tuberculides papulo-nécrotiques (Hallopeau's latest).

Hutchinson was the first, as Boeck has shown, to differentiate this rare affection, and point out its frequent association with lupus erythematosus. Then came Boeck, Brocq, and Barthélemy, and the rest, each describing independently and christening the supposed new affection according to his view of its pathology.

I have chosen the name "folliclis," given by Barthélemy, on account of its brevity, and as merely a clinical label which does not assume much as to the nature of the disease. The other names are too long for ordinary use, and too dependent on doubtful pathological theories.

It is a disputed point as to whether folliclis and acnitis (*vide* Acne Agminata) are different affections or only phases of the same disease, Barthélemy holding that they are separate, whilst most of his French colleagues consider them to be identical. Provisionally I keep them apart in the description, as folliclis more often occurs without acnitis than with it. The eruption attacks the limbs, especially the forearms and legs, hands and feet, the head and face being quite exempt except the ears, and the trunk being free in most cases, and is rarely much affected. The lesions are discrete and never grouped, says Barthélemy, but Hallopeau and others say they may form extensive but irregular patches, and while the back of the hands and sides of the fingers are frequently, and sometimes exclusively affected, the palms are seldom attacked (*vide* Dubreuilh's case); but I have seen it on the palmar side of the finger-tips. Each lesion is very constant in its characters, commences as a red

xii., p. 521; a good representation about foot and ankle. Good photographs: Bronson, "Acne Varioliformis of Limbs," *Amer. Jour. Cut. Dis.*, vol. ix. (1891), p. 121, of forearms and back of hand, and microphotographs by Fordyce. Dubreuilh, "Hydrosadénites suppuratives disséminées," *Arch. de Méd. expérimentale*, January 1st, 1893, palms. C. Boeck, "Die Exantheme der Tuberculose," *Arch. f. Derm.*, vol. xlii. (1897), pp. 7 and 175, gives complete history and references. "Dermatitis nodularis necrotica." Török, *Archiv. f. Derm. u. Syph.*, 1901, vol. lviii., p. 337.

point, then develops into a small papule which becomes vesicular, and forms a white apex to the papule, which is then easily felt in the skin, and goes on to a small almost painless nodule containing pus, which may form a ring round a horny centre and have a red areola. When it bursts, very little pus escapes, as most of it dries into a crust, which falls after five or six days, and leaves a cicatrix, first red, then pigmented, and finally white, from a millet to a lentil in size, seldom larger. The ear rims are irregularly cicatricial, and are very liable to chilblains. Its course is very indolent as a whole, but individually each lesion takes from four to six weeks, but sometimes it is more active. One of Barthélemy's cases had had it for ten years in crops, beginning in the lower limbs, and was never quite free, but was worse in summer, and it was aggravated by vapour baths. His forearms and legs were riddled with cicatrices.

On the fingers, as I have seen it, the nodules are very hard and indolent, and form pus round a central hard point, and leave a small hole in the hard elevation which does not soften as it does elsewhere. I have also seen what was probably the same disease as a widespread superficial eruption, apparently sweat follicular on the limbs and back, where it was abundant, but not much on the front of the trunk; the hands and feet were free, and there was one spot on the face. The patient, a male, æt. twenty-three, had acute phthisis. Bureau also describes a superficial form which he considered pilo-sebaceous.

Etiology.—Most cases occur in persons with a weak circulation, and the cases I have described as "*acrodermatitis pustulosa hiemalis*"* probably belong to folliclis, but three cases by Barthélemy and others have been worse in the summer; nevertheless cold is an important factor as a rule. I have three times seen it on the hands only, along with lupus erythematosus, an association noticed by Hutchinson, Boeck, Hallopeau, etc. In a large proportion, there has been evidence of tuberculosis in the patient or the family. In one of my patients, the lupus erythematosus on the face was multiple and symmetrical and much crusted, but in many respects had the aspect of a lupus vulgaris; she had enlarged glands and other evidence of tubercle.

Pathology.—There has been as much dispute about this as

* "A Clinical Study of some Winter and Summer Eruptions," *Brit. Jour. Derm.*, vol. xii. (1900), p. 39.

about the clinical and nosological aspects of the affection. Several observers, as Pollitzer, Giovannini, Dubreuilh, Fordyce, Unna, etc., have laid stress on the involvement of the sweat glands, and considered it as hidrosadenitis, and Fordyce seems to have traced the process from the subcutaneous nodule upwards; but Leredde and Bureau regard it as a granuloma of tuberculous origin, and consider the sweat coil lesions as secondary. Darier also considers it to be a tuberculide. Leredde* says giant and epithelioid cells are frequent, but not constant. Török says it begins as an endophlebitis. No tubercle bacilli have been found, hence Hallopeau assumes it to be of toxin tuberculous origin; but though this is plausible for many cases, it is unproved and the true pathology has yet to be demonstrated.

Diagnosis.—The characteristic features are the succession of indolent almost painless nodules, with suppuration usually round a central hard core, leaving a small pigmented pit, and attacking the limbs chiefly, and occurring frequently in subjects tuberculous in themselves or relatives, and sometimes associated with lupus erythematosus. The supposed distinctions from acne agminata are as follows:—

In acne agminata, the seat of predilection is the face, although the limbs may be affected. In folliclis, the seat of predilection is the limbs, and although it may affect other parts, the face and head except the ears are exempt. While acne agminata may group on the face, it is scattered on the limbs, but folliclis may be in irregular groups and sometimes very crowded ones.

Acne agminata begins as a subcutaneous shot-like nodule (which may be shelled out if an incision is made over it), and works towards the surface, suppurates freely, and breaks down and leaves a scar, and both lesion and scar are larger than folliclis. In the latter the initial lesion is dermic, though deep in it where it forms a flattened papule, which becomes vesicular or pustular and often umbilicated, and never suppurates freely and cannot be enucleated at an early stage. Folliclis lesions predominate on the buttocks, elbows, and knees. The process of each lesion and the disease as a whole is much more acute in acne agminata than in folliclis. The affection is not in any way connected with tuberculosis either in the patient or family history, while it is so in folliclis.

* "Sur un Granulome Innominé," by Tenneson, Leredde, and Martinet, *Annales de Derm.*, vol. vii. (1896), p. 913.

Dubreuilh and others do not admit all these distinctions, but think the cases merge into each other.

Treatment.—Before suppuration apply a mercurial plaster, such as the mercury and carbolic paraplaster No. 255 of Beiersdorf, or Vidal's red plaster; and it might also be used if there is induration left after the evacuation of the pus. When suppuration has occurred, remove the central core, if any, and syringe out with 1 in 40 carbolic solution or perchloride of mercury 1 in 5000, and fill up the hole with iodoform.

If there is tuberculosis in any overt form, cod-liver oil and other treatment appropriate to the constitutional condition may be given. In the winter cases, to which I have alluded, improving the peripheral circulation, giving five grains of thiol in pill or cachet three times a day and rubbing in vasogen iodine ten per cent. appeared to be quite successful. In acne agminata, Besnier found great benefit from giving salol internally, which corroborates Barthélemy's intestinal intoxication theory.

C. DISEASES OF THE HAIR FOLLICLES.

Diseases of the hair are dependent upon pathological changes in the follicle, similar to those of other parts of the skin. They comprise "inflammation" (sycosis or folliculitis); "trophic" changes, leading to "overgrowth" (hirsuties), or to "atrophy," producing loss of elasticity (fragilitas, trichorrhexis nodosa, moniliform hair, etc.); to "colour" defects (canities, etc.); or if the damage is so severe as to lead to "falling out" of the hair (alopecia in various forms). Then, as pathological accidents, so to speak, there are "concretions" on the hair (leptothrix, piedra), and "vegetable parasites" (favus, tinea tricophytina). These last are treated of in the section on Hyphomycetic Diseases.

CONCRETIONS ON THE HAIR.

LEPOTHRIX.

Synonyms.—Trichomycosis nodosa (Patteson); Trichomycosis palmellina (Pick).

Deriv.—λεπίς, scale, and θρίξ, the hair.

This affection was first described by Paxton of Chichester in 1869, and then by E. Wilson, who gave it its name. Pick of Prague,

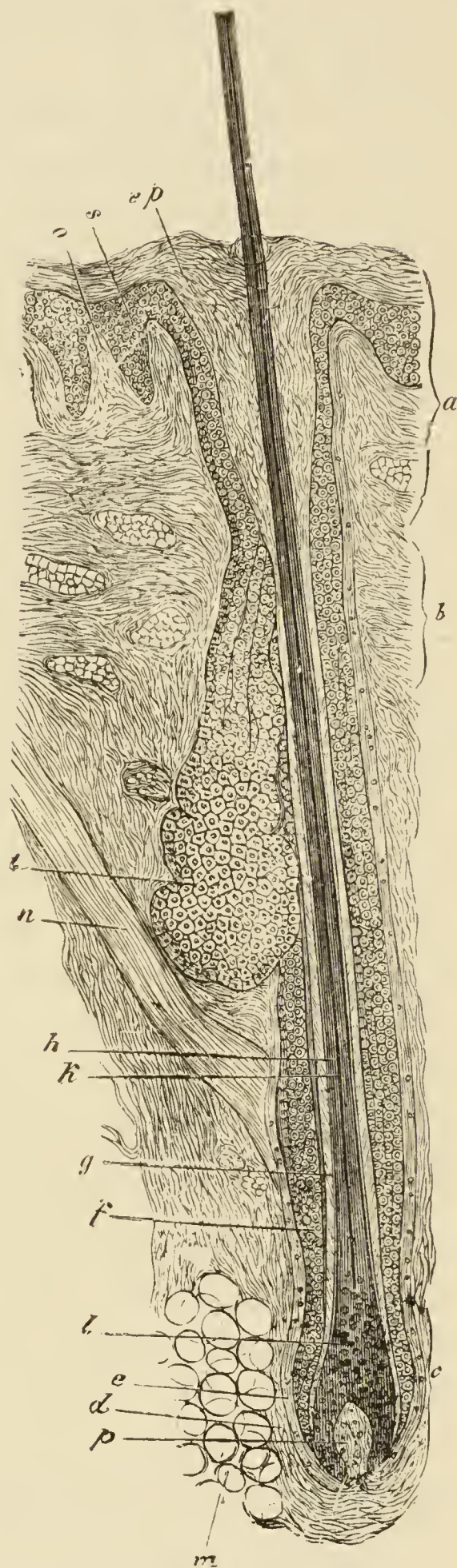


Fig. 71.—NORMAL HAIR OF THE BEARD (Biesiadecki).

a, excretory duct; *b*, neck of the follicle; *c*, dilatation of the hair follicle; *d* external sheath of the hair follicle; *e*, internal sheath of the hair follicle; *f*, papilla; *g*, external root sheath; *h*, internal root sheath; *i*, cortical substance; *k*, medullary substance of the hair shaft; *l*, root of the hair; *m*, arrector pili; *n*, sebaceous gland; *o*, papillæ of the skin; *s*, rete mucosum; *ep*, epidermis, which is continued into the excretory duct of the hair follicle.

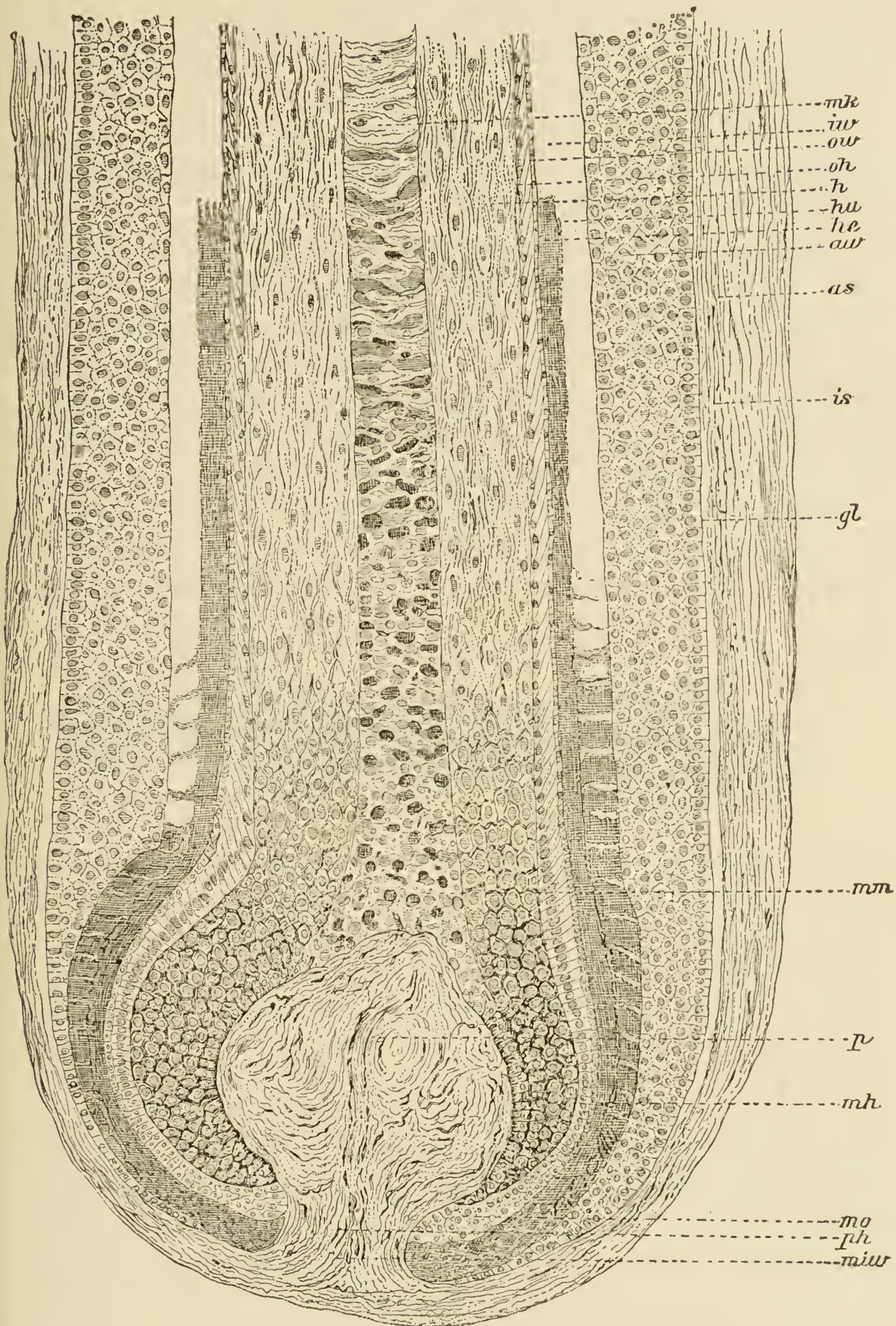


Fig. 72.—Longitudinal section of the root of a NORMAL HAIR from the beard (Unna).

as, external root sheath of the follicle; *is*, internal sheath of the follicle; *gl*, vitreous membrane of the follicle; *aw*, external root sheath (prickle layer of the follicle); *iw*, internal root sheath; *he*, sheath of Henle; *hu*, sheath of Huxley; *ow*, cuticle of the root sheath; *oh*, cuticle of the hair; *h*, cortex of the hair; *mk*, medulla of the hair; *p*, papilla; *miw*, *mo*, *mh*, *mm*, matrices of *iw*, *ow*, *oh*, *h*, *mk*; *ph*, neck of the papilla.

unaware of its having been long known in England, described it independently long afterwards, and many of his German *confrères* claim priority for him.

The condition is very common; but as it rarely gives any trouble (though in one of my cases it was associated with intense itching), it is usually overlooked.

Symptoms.—The hairs either of the axillæ or scrotum where it is in contact with the thigh, are the only regions where it has been observed; and since both these positions are characterised by warmth and moisture, these conditions are probably essential to its production. In the most marked cases, the hairs are brittle, and generally break off if an attempt is made to pull them out. On holding a hair just removed, up to the light, the borders are irregular and ragged, and it looks dull and lustreless, like a piece of wet string. On placing a hair under the microscope, nearly all along the shaft, but generally with some intervals of healthy hair,

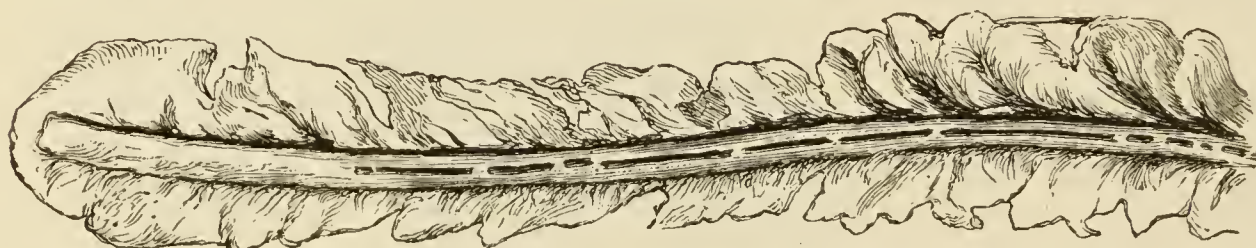


Fig. 73.—Hair of scrotum affected with lepothrix for nearly its whole length. $\times 100$.

and occupying the whole or part of the circumference, is an irregular lobed concretion, and the divisions being directed upwards, it closely resembles the feather end of an arrow (fig. 73). When the condition is slightly developed, it consists of circular, well-defined masses, lying on, but not encompassing, the shaft, and often three times its diameter. Embedded in these masses are some of the fibres of the cortex, which have been separated at one end by the concretion (fig. 72). In some places, the fibres of the whole shaft are split up, and the hair may break off with a brush-like termination embedded in the masses, or the fracture may be a clean one. In the axillæ, the concretions are often of a red colour, due to a micrococcus (see Red Sweat).

The change is mainly a surface one, and the concretion is very resistant both to strong acids and caustic alkalies, æther and chloroform. With a high power, the structure seems to consist of minute round masses.

Patteson* has shown that by staining with aniline violet, and decolorising by Gram's method, a short bacillus can be demonstrated, which penetrates under the cortical scales, and as it is constant, it is probably the cause of the affection. Payne† had previously found bacilli in this disease. Eisner from cultures describes it as a diplococcus enclosed in a capsule, and that another diplococcus is enclosed with it in a second common envelope. Sonnenberg confirms this. Columbini also found cocci from which he cultivated diplococci and short chains or aggregations. An organism has also been found in relation to the red sweat of the axilla so often associated with this condition of hair by Babes, Pick, Balzer, and Barthélemy, who regarded the bacterium of that disease as the bacterium prodigiosum; but in hairs from the scrotum, the same condition occurs without the red colour.

In one case, I excised a piece of the scrotum, but microscopical examination of the hair roots revealed nothing abnormal.

Treatment was not very successful. Shaving and various



Fig. 74.—Hair of axilla affected with lepothrix in nodules. $\times 100$.

applications were tried; and as most of my patients were in the medical profession, the treatment was well carried out. In future cases, I shall try shaving and sponging the axillæ with 1 in 1000 bichloride of mercury solution, with a view of preventing the development of organisms in the sweat.

Piedra‡ (Spanish for a stone). The disease is almost confined to the hair of the head of native women who live in the valleys of Cauca, in Columbia; in rare instances, it affects the hair of the head and beard in males. It consists of pin's-head-sized nodules, to the number of from one to ten, situated on the surface of the hair shaft, and beginning about half an inch from the root, either on one side or surrounding it.

* *Trans. Royal Academy of Ireland*; and Reprint, J. Falconer, Dublin, 1889. He suggests the name "trichomycosis nodosa," but this has already been proposed for "piedra," and it is better to stick to the recognised term "lepothrix," even if its pathological signification is erroneous.

† *St. Thomas's Hospital Reports*, vol. xvi., p. 268.

‡ Malcolm Morris, *Path. Trans.*, vol. xxx. (1879), p. 441, with plate.

The nodules are black, intensely hard, and rattle when the hair is combed; and, according to both Desenne* and Morris, consist of closely aggregated spore-like bodies due to fungous growths. More recently, Juhel-Rénoy,† by his preparations and cultivations, has clearly shown that the organism is a fungus, with spores and mycelium.

Its origin is unknown, but in Columbia it is supposed to be due to the women washing their hair with a mucilaginous fluid, like linseed oil.

Juhel-Rénoy, as a result of experiments in cultivation, suggests as a treatment repeated sponging with 1 in 1000 solution of corrosive sublimate used as hot as possible, petroleum æther being a useful adjunct.

Piedra Nostras. See *Tinea Nodosa*.

Chignon Fungus.‡ Beigel describes this as occurring as oval or roundish masses surrounding the hair shaft at irregular intervals. It was due to a fungus, which Hallier regarded as a species of sclerotium, calling it *sclerotium Beigelanum*. Behrend§ is of opinion that it is identical with *piedra*. Beigel also describes another nodular disease of the hair of the head, due, he thinks, to a disease of the hair sac, the nodules being composed of compressed cells, like those of the inner root sheath. (See "Hair-eaters.")

Tinea Nodosa, *Piedra Nostras* (Unna), is a name given by Morris and Cheadle to a case of nodular growth on the hair of the whiskers and beard of a young man. An instance of it came under my notice in which it affected the left side of the moustache of a medical man, who complained that the hairs, if twisted up, stuck together. On examination, the hairs were found to be

* *Lancet*, vol. ii. (1878), p. 165, is an abstract of Desenne's paper, read before the Académie des Sciences. In the same volume is much correspondence on the subject, in which the disease is erroneously mixed up with trichorrhæxis nodosa.

† *Ann. de Derm. et de Syph.*, vol. ix. (1888), p. 777, and vol. i. (1890), p. 766, illustrated. Juhel-Rénoy wishes to rechristen it "trichomycose nodulaire," the same name that Pattenon unwittingly proposed for lepothrix.

‡ Beigel, *Diseases of the Hair*, p. 111; also Tilbury Fox, "A New Fungus," *Jour. Cut. Med.*, vol. i. (1867), p. 175.

§ G. Behrend, "Ueber Trichomycosis nodosa (Juhel-Rénoy)," *Berlin klin. Wochens.*, 1890, No. 21. Full abstract in *Ann. de Derm. et de Syph.*, vol. i. (1890), p. 829.

ensheathed in a concretion, which made the outline of the hair irregular, and was dark brown, dull, and opaque; it began some little distance from the root, which was quite healthy, and destroyed the elasticity of the hair, making some of them break off short, and others split. Under the microscope, the nodules were seen for the most part simply to ensheath the hair; but in some hairs, the growth had evidently penetrated below the surface, and where the hair was split, to enclose each portion. When disintegrated, and viewed with a higher power, the concretion was seen to be composed of fungus spores, somewhat smaller than those of *tinea tonsurans*, as in Cheadle's case. In a case of mine, Pernet found that the spores were in rows at right

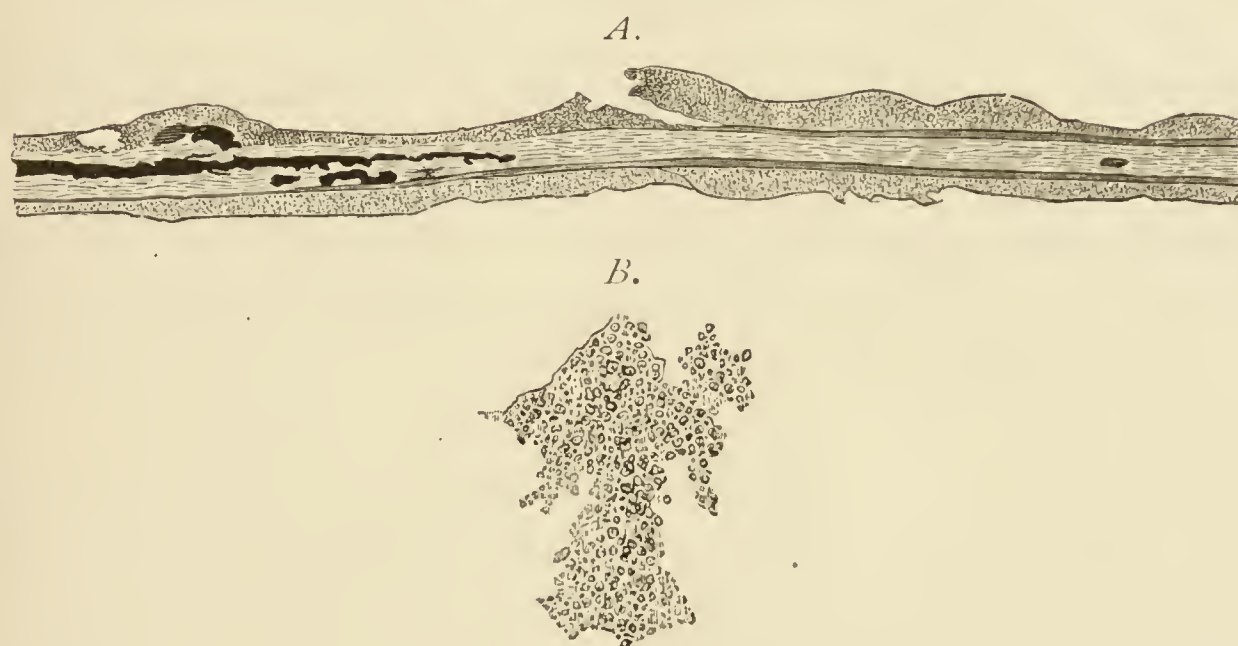


Fig. 75.—*Tinea nodosa* from moustache.

A. With low power, showing incrustation on the shaft of the hair.

B Small portion of incrustation with higher power. \times about 300.

angles to the shaft of the hair, and looking like segmented mycelium bound together by a cement secreted by the fungus. Possibly Thin's * case of parasitic affection of the moustache is the same disease; Behrend† and Unna‡ seem to have each met with a case, and Giovannini§ also, or an analogous condition. Trachsler investigated Behrend's and Unna's cases and found minute differences in the cultivation of the fungi. Shaving or clipping close for some time is the only remedy.

Epithelial fragments, probably portions of the internal root

* *Lancet*, vol. i. (1879), p. 190, with woodcut.

† *Lancet*, November 4th, 1882.

‡ *Loc. cit.*, French Abstr., p. 830.

§ *Viertelj. f. Derm. u. Syph.*, 1887.

sheath, sometimes adhere to the shaft of the hair as it grows up, and look like concretions. J. C. White of Boston informs me that it is common in America in association with alopecia furfuracea, and is erroneously thought to be the cause of the loss of hair; hence the popular name of “hair-eaters.” A very high degree of it is often produced when chrysarobin ointment is employed on the scalp; a conical concretion grows up with the hair, and at first sight looks like a nit, but the hair is in the centre of the



Fig. 76.—Portion of internal root sheath adherent to shaft—the so-called “hair-eater.” *

concretion. An extreme case resulting in permanent destruction of the hair is described by Grindon.*

Plica, which may be defined as entangling of the hair, occupied at one time a comparatively important place in works on skin diseases, and Alibert† devotes five plates to depicting various forms of it, and gives elaborate descriptions of the condition; but since the mysterious plica polonica was proved to be nothing more than the product of neglect and the matting due to inflammatory exudation, excited by innumerable pediculi, agglutinating the hair together, the term is scarcely mentioned in dermatological works. There appears, however, to be a rare form, which seems entitled to the name of **neuropathic plica**. Six cases are all that I know of, one reported by J. F. Le Page,‡ another by Wilson in relating Le Page’s case, and one by Stelwagon, and another in a Hindoo by D. B. Pestonji.§ Le Page’s and Pestonji’s cases occurred in young women, and in both it came on after washing the hair in warm water, one in a few minutes, and the other after two hours. The hair was drawn up into a hard, tangled lump impossible to unravel, limited to the right side in Le Page’s patient, who had very long hair, and in Pestonji’s case to the back of the head, where

* *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. xv. (1897), p. 256.

† Alibert’s *Atlas*, 1st ed., plates vi. to x.

‡ *Brit. Med. Jour.*, January 26th, 1884, p 160. His specimen is in the College of Surgeons Museum, No. 374, with observations by Wilson.

§ *Lancet*, September 3rd, 1885.

on each side was an elongated mass very hard and firm, like a rope, and about the size of the fist. There was no reason to believe that it was an imposture, and the Hindoo woman cut the lumps off herself and then threw them away. Le Page found the most contracted hairs flattened. Stelwagon's* case of plica in a woman, occupied a dollar-sized area above the nape, grew to four feet long in twelve years, but its mode of onset was unknown.

Ohmann-Dumesnil† has met with a similar case in a girl of sixteen following a chill during the catamenia. There was a rise of temperature, and two days after it fell, matting commenced, and was established in ten days, and formed a plica ten inches in length, and one inch in thickness. The right cornea also sloughed and destroyed vision. The outline of the hair was irregular, and the hair was brittle as in trichorrhæxis. In a case of Dubreuilh,‡ a pronounced hysteric, the distal half of the hair became like a negro's, but did not mat, and in a few weeks became normal again. A slight degree of matting occurred in another case of his.

HIRSUTIES.§

Deriv.—*Hirsutus*, hairy.

Synonyms.—Hypertrichiasis ; Hypertrichosis ; Polytrichia ; Trichauxis ; Hypertrophy of the hair.

Hairs may be increased in number or in size, either as regards length or thickness, and may grow in either normal or abnormal positions. In normal positions, there may be excess in length and quantity on the heads of both sexes, and in the beard in man. Thus Beigel relates that in Negreni, a once celebrated dancer, after an acute illness, the hair grew to over nine feet long ; while

* *Amer. Jour. Med. Sci.*, December, 1892.

† *Internat. Med. Mag.*, July, 1893, and abs. *Brit. Jour. Derm.*, vol. v. (1893), p. 383.

‡ Dubreuilh, *Annales de Derm.*, vol. iii. (1902), p. 368.

§ *Literature.*—Wilson's *Lectures on Dermatology*, 1878 ; Beigel, *On the Human Hair* (Renshaw : 1869), who records fully most of the above cases and many others, with woodcuts ; Leonard (Detroit : 1880). See portraits by Beigel, also in Hebra's *Atlas*, Lief. ix., Taf. 7 and 8 ; Memoir by Bartel in *Zeitschrift für Ethnologie*, 1879 ; Geyl, *Hypertrichose*. (Hamburg : 1880).

at Edam is the portrait of a man whose beard was nine feet long, and Leonard mentions one of seven feet. Similar excessive growth may also be seen in the eyebrows, inside the nose, ears, axillæ, and pubes. Then the natural down or almost imperceptible hair may grow excessively into a sort of fur, and universal hirsuties be produced. One of the most remarkable instances was in the oft-quoted Burmese Shwe-Maon and his family, where, through three generations, this excessive hairiness was observed, absolutely all over the body, except the palms and soles. There was also the Russian Andrian Jewtichjew and his son Feodor, figured in Ziemssen, and the Mexican hairy family of Ambras. Another Burmese instance was lately on show in this country, a male child called Krao.

In abnormal positions, we see it occasionally in women and children, who have moustaches, beards, whiskers, etc. Some of the best examples of bearded women are those of Julia Pastrana, the Spanish dancer, whose whole body was also hairy (her child developed a similar condition); that of Barbara Urster, who lived in the sixteenth century, and had a beard down to her girdle; and the woman in Barnum's show who has a fine beard, moustache, and whiskers. These examples of hirsuties are selected on account of their being specially developed; but many cases approaching them in degree as well as in kind are to be found in the authors already quoted, and elsewhere.

In some cases, two or three hairs grow from one follicle. Coarse, and even long hairs, in connection with moles have already been described (*Nævus pilosus*).

The hair does not always grow in a normal direction. Thus in Martinez del Salper the direction of the hair on the back was upward. This occurs sometimes in the eyelashes, exciting much irritation in the eye (*trichiasis*), in the eyebrows, and elsewhere. In the extreme hirsute cases, dental defects, usually in the form of deficiency, seldom of excess, are present as a rule.

Etiology.—Racial peculiarities account for a certain number of cases. Thus the Burmese already mentioned, and the Ainos of the Island of Yezo are noted examples, though there has been gross exaggeration with regard to them. Unna suggests that the excess is really the result of defective development. Dark people are more liable to it than fair. Family predisposition is also a factor. Some cases are congenital, some occur

later—in childhood, puberty, or in the decline of life. The association of congenital lumbar hypertrichosis, club-foot, and perforating ulcer with concealed spina bifida was first pointed out by Virchow, and since by von Recklinghausen, Sutton,* and others. In cases published by Atgier, one brother had lumbar hypertrichosis, while the other had it between the shoulders; in each the tuft was very long. Hirsuties occurs in mannish women, and also in disorder or irritation of the genital organs or during the abeyance of sexual functions; and is often seen in insane women. Both in women and children, it has been observed in association with cancer of the supra-renal capsule.† Again, it is seen in some women at puberty, during pregnancy, in amenorrhœa, or in sterile women; but in by far the majority, it occurs at the climacteric period and onwards. It is by no means necessarily indicative of bodily vigour, even in men. Many cases of excessive growth in normal positions have come on after severe illnesses, and although it is common to see moderate excess in strong men, some of the most notable instances have been the very reverse. It follows local irritation sometimes, coarse hairs developing on the site of a blister, after using sulphur ointment, mercurial applications, etc.

Prognosis.—As a rule, the growth is permanent, but in a few cases, where it is due to a temporary cause—pregnancy, defective health, poulticing, etc.—it has fallen off, or become lanugo-like again.

Treatment.—Means for the permanent removal of superfluous hair can only be adopted with success when the increase or development is moderate, such as is present in many women on the chin, etc.

The only effectual treatment is that of electrolysis, first used by Michel of St. Louis, and Benson of Dublin (for trichiasis), and afterwards by Hardaway, Piffard, and other American physicians. From extensive experience, I can speak most highly of this treatment, though it is unfortunately very tedious, both for patient and operator.

* Sutton on "Spina Bifida Occulta, and its Relation to Ulcus Perforans and Pes Varus," *Lancet*, July 2nd, 1887, p. 5.

† No. 3578 E., Museum of Coll. Surg., is "primary carcinoma of the adrenal," which was in life associated with abundant development of hair on the face and extremities in a woman, æt. thirty-two.

The mode of procedure is as follows:—The patient being placed opposite a good light, with the head resting in a comfortable position, and the superfluous hair having been cut to about one-eighth of an inch long, a fine needle, connected by means of a suitable holder with the *negative* pole of a galvanic battery, is introduced down to the bottom of the hair follicle by keeping the needle parallel with the direction of the hair. The circuit is then completed by the patient grasping the positive pole tightly. Bubbles of froth are immediately perceived, and after a few seconds, the patient releases her hold of the positive pole. The needle is withdrawn, and an attempt is made to withdraw the hair by forceps, but without any forcible traction. If the hair is not perfectly loose, the needle must be introduced again. About six to ten cells of almost any twenty-cell battery are usually sufficient, but the number will vary according to the strength of the battery. It is advisable to have an arrangement for easily altering the number of cells, and an absolute galvanometer to measure the strength of the current, which varies greatly, even at the same sitting: from three to five milliampères are sufficient. The only way to secure uniformity in the strength of the current is to have more cells in use than are necessary for the current required, and then to reduce it by means of a rheostat. The strength of the current is also affected by the moisture of the skin and electrode, and the closeness with which it is grasped or otherwise applied.

If the needle is of steel, it should be as fine as possible, mine are No. 16, which I prefer either to a gold needle with iridium tip, or to the irido-platinum one recommended by Hardaway. These soft metal needles are supposed to feel their way, so to speak, into the follicle, while the steel ones, being sharp and rigid, easily pierce and go outside of it. The objection to the steel needle is, I think, more theoretical than practical. G. H. Fox recommends the finest jeweller's broach, ground so that it has a smooth bulbous point. From twenty to thirty hairs may be removed at a sitting, depending upon the skill of the operator and upon the hairs being coarse or fine. A lens may be required to find the orifice of the follicle, and it is convenient to have a watchmaker's lens set in a spectacle frame, a four-inch lens in a cork mount being the most suitable. The best possible electrode for a patient to grasp is a carbon cylinder, covered with chamois leather, wetted with salt

and water, and mounted on a handle. I have also found it advantageous to have a small pair of forceps attached to the handle of the needle holder, as it saves time and prevents the forceps being dropped or mislaid (fig. 77). It is less painful to the patient if she is not holding the positive pole when the needle is introduced or withdrawn, as otherwise a sharp prick is felt. The operation is decidedly uncomfortable, being attended with a sense of burning, but few patients consider it seriously painful, and none unbearable. In no case should the needle be attached to the positive pole. It is less effectual, and with steel needles blackens the skin. In very sensitive patients, I have had rubbed in, just before the operation, a 20 per cent. ointment of cocaine and lanolin, and I have also injected cocaine hypodermically, but the after-pain is only slightly mitigated by external use, and hypo-

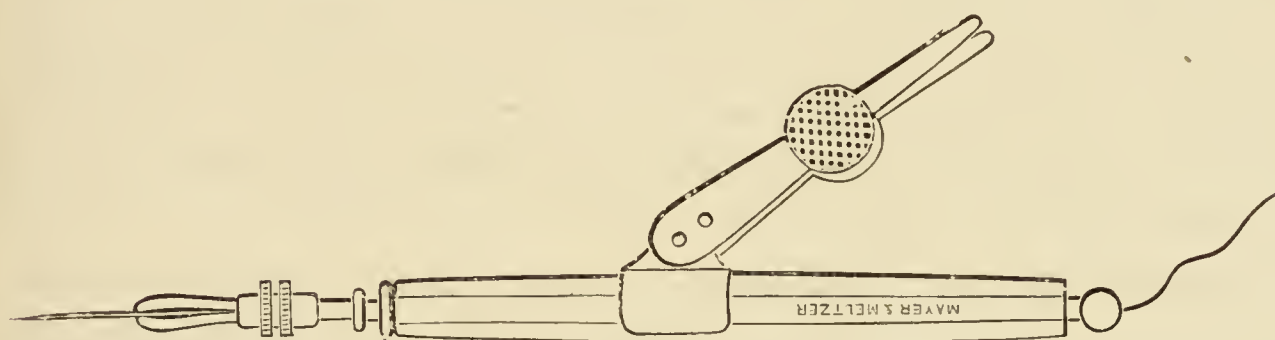


Fig. 77.—Needle holder, with forceps attached, for removing hairs by electrolysis. In use, the forceps should be turned backwards instead of forwards, as in the woodcut, otherwise the patient may get an accidental scratch with the needle.

dermic injections are sometimes dangerous. Morton of New York recommends that a solution of six grains of cocaine in a drachm of guaiacol should be introduced into the skin by electrical osmosis. According to Lewis Jones, anæsthesia can be produced in four or five minutes if a little of this solution be applied to the skin by means of blotting paper, and on this a flat metal disc is placed, attached to the positive pole of the battery, and the current turned on until it reaches four milliamperes for a half-inch electrode. Begin with ten or fifteen cells and reduce the number as the resistance diminishes. A slight irritation of the skin is produced if it is applied for too long a time. This form of anæsthesia would only be necessary for a very sensitive patient. After the operation, a small red papule is left at the site of removal, which soon flattens down to a red spot; and this, after a time, whitens down to a minute scar, only perceptible when carefully looked for. Hairs that are very close together should be removed

at separate sittings, and it is usually advisable to wait a week between each time. Bathing the part operated on with warm water relieves the discomfort, and calamine lotion helps to conceal the redness, etc., until it has had time to subside. As a rule, the coarser hairs are alone fitted for operation; for lanugo growth the remedy is worse than the disease. The process is very successful for small hairy moles, but a stronger current is necessary to completely destroy the growth.

Owing to the theoretical simplicity of the operation, it has largely been undertaken by ignorant and unqualified persons, and their unskilful manipulations have brought the procedure into some disrepute, both as regards efficiency and the resulting disfigurement. A good deal of practice is required to get the best results obtainable, but, granted the necessary skill, the operation is thoroughly satisfactory as regards the permanency of the removal, and there will be no marks left with the finer hairs, and even with coarse hairs the scars left ought to be so small as to be quite insignificant when sufficient time has elapsed for them to be quite white.

It should be explained to the patient that a certain number, varying with the coarseness, position of the growth, and the skill of the operator, will require a second operation, owing to the hair papilla or its root sheaths being imperfectly destroyed. This is unavoidable to some extent, as the aim is, not to use a stronger current, nor for a longer time, than is absolutely necessary; moreover, the direction of the root in some positions, *e.g.*, in the neck, is not always in a line with the external portion of the hair, and so the root may be missed.

Finally, in a very small number of cases, disappointment is met with, because some of the lanugo hairs become coarse after the removal of their stouter fellows. Perseverance will overcome all these difficulties. Unnecessarily large scars result, and occasionally keloid, from too strong a current, from its being too long continued in each follicle, from too coarse a needle being employed, from removing hairs which grow close together at one sitting, or from the sittings being repeated at too short intervals; or when epilation has been practised by the patients for a long time, so that they grow erratically as regards direction of the root shaft, and the needle has to be introduced several times.

The Röntgen rays have recently been strongly recommended

by Schiff and Freund and Jutassy and others for the removal of superfluous hairs, hairy moles, etc. Their action is powerful in proportion to the intensity of the light, its proximity to the skin, and the duration of the exposure. As is now well known, prolonged and repeated exposures are liable to set up a severe dermatitis with ulceration most difficult to heal, and with more or less permanent damage to the nerve terminations. To avoid these evil consequences, which on a lady's face would never be forgiven, Schiff and Freund recommend that the current should not exceed two ampères, the maximum tension being eleven and half volts, the spark length of the lamp not less than six inches, and the negative button placed eight to ten inches from the skin, with an exposure not exceeding ten minutes if the jet interrupter is employed. From ten to thirty sittings are usually required, the effect being cumulative; the coarser the hair the longer and stronger must be the exposure. In some cases, a brown discoloration of the skin is produced, which disappears three or four days after the hair comes out. In several dark-haired people the hair became snow-white before it fell out. In some of Jutassy's cases no regrowth had occurred a year after the operation.

Although this sounds all very simple, the reader is warned not to undertake to remove superfluous hair from the face before he has had experience in handling the Röntgen ray apparatus, and has tried it on covered parts of the body and found what he can do in removing hair without producing serious damage, not only by a breach of the surface, but by injury to the nutrition of the affected part. It is obvious also that as from ten to thirty sittings are required, the proceeding would be somewhat costly, but so also is electrolysis if the number of hairs is very great. Moreover, owing to idiosyncrasy on the part of some patients and to peculiarities in some tubes, burns occur most unexpectedly, violent inflammation sometimes setting abruptly from seven to fourteen days after the exposures have ceased.

At the end of six to eight weeks some signs of recurrence will be seen, and the exposures have to be recommenced, but a smaller number of exposures will be required than at first. Several such repetitions are often necessary, and this uncertainty, and consequent expense, and the risk of burning the skin, limit the procedure considerably.

High frequency currents have also been used for the same purpose, but sufficient experience has not yet been gathered to pronounce definitely upon it.

The alternatives to the above methods are epilation, shaving, and depilatories.

Epilation with tweezers makes the hair grow coarser and longer. Shaving, having to be a daily performance, is viewed by most patients with great repugnance; and depilatories, while they are not more effectual than shaving, are dangerous applications, as they are liable to excite considerable irritation if the skin is sensitive; therefore I never employ or sanction them. Duhring recommends *barii sulphidi* ʒij, *pulv. zinci oxidi*, *pulv. amyli āā* ʒiij. Mix. Make into a thin paste with water, and apply on the hairy part for ten to fifteen minutes; when heat of the skin is felt, clean off the paste and apply a soothing unguent, and powder the face with starch to conceal the redness. Sulphide of sodium may be substituted for the barium salt. It must be repeated every few days. Many others are employed, but the patient should always be cautioned of the risk she runs in using them. Where the operation is impracticable on account of the enormous number of hairs or the expense of it being too great for the patient's means, I recommend shaving as the safest and easiest method, and as women are inexperienced and have a repugnance to an ordinary razor, I have found an excellent substitute in Auguste Bain's *Rasoir Mécanique*, the "Star" Razor, or similar contrivances; they do not look like a razor, and the patient cannot cut herself, unless she tries to do so.

ATROPHY OF THE HAIR.

Defective nutrition of the hair may give rise to various structural alterations, which may be symptomatic or idiopathic.

The symptomatic cases are generally due to some constitutional disease, as syphilis, diabetes, fevers, phthisis, or other disorders damaging the vital powers. The hairs become dry and lustreless, of smaller diameter, and may split and break up in various ways.

Idiopathic atrophy includes those cases in which no general disorders to account for it can be traced.

Various affections come under this category, as follows.

The hair may be simply so brittle that it breaks off with the slightest strain, such as brushing and combing; this is one form of *fragilitas crinium*; or the hair may split in various ways. The most common event is for it to split at the end into three or four segments, which may extend some distance down the shaft. It generally occurs in long uncut hair, and therefore on the scalp hair in women, but it is also frequent in long-bearded men. Kaposi explains it by supposing that, owing to the length of the end from the root, sufficient nutriment does not reach so far along the shaft, and the hair becomes brittle and splits up. The obvious remedy for such a state of things is to clip the hair frequently, but this is not the whole story, for sometimes, as Duhring pointed out, and as I have myself seen on the beard, the splitting seems to take place from the root, and looks as if there were several hairs springing from one bulb (fig. 78); the cause is unknown,



Fig. 78.—Hair of beard split down to the follicle. $\times 4$.

beyond its being a trophic defect. It is attended sometimes with a pustular folliculitis of the affected hairs, but whether as a cause or consequence is not certain. Marked cases of this kind are recorded by Rushton Parker* of Kendal, and by Duhring.† In one there was severe acne vulgaris, but not in the other. There was also associated trichorrhexis in Parker's case.

In another form the cuticle only is affected, and splits away, giving the appearance of the hair being frayed out; it may be only here and there, or all along the shaft.

Trichorrhexis nodosa (Kaposi). *Synonyms*.—Trichoclasia (Wilson); Trichoptilosis (Devergie); Swelling and bursting of the hair (Beigel).

It may be defined as a green stick fracture of the hair shaft, and was first described by Wilson (1849), and then independently by Beigel (1855), Wilkes (1857), Kaposi, etc.

It chiefly affects men, attacking the whiskers, beard, or moustache;

* *Brit. Med. Jour.*, December 15th, 1888, with engraving.

† *Amer. Jour. Med. Scien.*, vol. ii. (1878), p. 88.

more rarely the eyebrows, and hairs of the axillæ, pubes, or scalp. I have once seen it on the front of the scalp in a lady who was apparently well, but had lived a good deal in hot climates. It began in a patch, the size of a sixpence, on the left temple, and spread across, but did not quite reach the marginal hair on the forehead. Dr. Pratt of Leicester also sent me hairs from the scalp of a lady, æt. twenty-seven, in whom the disease had existed for six years without apparent cause. To the naked eye, there appears to be from one to six or seven whitish spots, or small bead-like swellings, situated irregularly along the hair shaft, which may, at first sight, be mistaken for nits, but these are always on one side of the hair. The hair breaks off at these nodes with very slight traction, leaving half of it still attached to the growing part. Under the microscope, the cortex is seen to be split up into its constituent fibres, the medulla alone maintaining its continuity; and the whole has been aptly compared to two short bristled



Fig. 79.—Trichorrhexis nodosa from scalp of lady, æt. thirty. Obj. $\frac{4}{10}$, ocul. 2 in.

brushes, stuck end to end (fig. 79). Pigment granules are to be seen between the fibres, and have been mistaken for fungous elements, of which, however, there is no real evidence.

Beigel attributed this appearance to the formation of gas within the hair, which distended it to a bursting point; but the simple explanation of Wilson is the more probable, viz., that owing to damaged nutrition the hair becomes brittle, but instead of breaking completely across at once, breaks, like a tough stick, first at the cortex. Moreover, there is not always a node at the point of fracture, the shaft there being sometimes of less than the normal diameter.

Paul Raymond* states that trichorrhexis nodosa is very common on the labia majora of women, and ascribes it to a diplococcus rather larger than staphylococcus pyogenes, which behaves quite differently under cultivation. This organism, he

* *Ann. de Derm. et de Syph.*, vol. ii. (1891), p. 568.

thinks, erodes the cortex of the hair, and so weakens the structure and facilitates fracture. It is not nearly so common on the male genitalia, though both here and on the beard it is probably not so rare as is generally supposed. He found a similar, but smaller diplococcus on beard hairs in two cases; these cultivated small at first, but a few days later he found cocci of the same size as those from the female genitalia. He considers that though they are the proximate cause of the affection, they are not special to it, and are very common. He thinks the disease is communicable by contagion, and thus explains McCall Anderson's cases where it seemed to be hereditary.

Hodara* says that in the hair of women in Constantinople an affection very like trichorrhesis nodosa is very common, but that it differs in that the hair between the fractures is split, while in true trichorrhesis the internodal part is normal. He is not sure, therefore, whether these affections are identical, but he claims to have found in his cases a small bacillus with rounded ends, and other forms which cultivation showed were degenerative forms, and he even had the "happy opportunity" of inoculating a young girl with these organisms.

On the other hand Bruhns† says that trichorrhesis nodosa is very common among the women of Berne, and his cases appear to resemble Hodara's. His conclusions are that his experiments are against a bacterial origin, and he argues that in fusiform hairs trichorrhesis occurs at the weak internodal point, while the argument that the disease is apparently communicated to hair-brushes is answered by the fact that it only occurs in old brushes, where mechanical causes sufficiently account for it. Ravence of Charleston, however, had it in his moustache, and found his shaving and tooth brush were affected. Moreover he quotes Räuber, who recorded the periodic appearance of trichorrhesis in an epileptic after fits.

Barlow‡ of Munich after reviewing the work of Raymond, Blaschko, Hodara, Spiegler, and Essen, had previously come to the same conclusion as Bruhns, viz., that the parasitic origin had not been proved, and that the probabilities pointed solely to a

* *Mal. Cutan.*, vol. vi. (1894), p. 641.

† *Archiv f. Derm. u Syph.*, vol. ix. (1897), p. 43. Abs. *Brit. Jour. Derm* vol. ix. (1897), p. 290.

‡ *Munch. med. Wochenschr.*, No. 26, 1896. Abs. *loc. cit.*, p. 121.

nutritive change, which destroyed elasticity of the hair, and made it liable to fracture from mechanical causes.

On the other hand, Markusfeld* rubbed up some of the hair with pumice-stone in a sterilised mortar, and from this by culture obtained a bacillus which stained by Gram's method, and he identified it as the same as that described by Spiegler.

I have seen a case of a lady† whose back hair had been affected for eighteen months, and whose husband had had it in his moustache for six years.

The treatment is not very satisfactory. Shaving is recommended, and has, when long continued, sometimes been effectual; as a rule, however, the hair grows again as brittle as ever. Change of climate has been successful, and in all cases efforts should be made to discover and remedy any defect of the general health. Faradising the part might be tried.

If the view of its parasitic origin is correct, careful removal

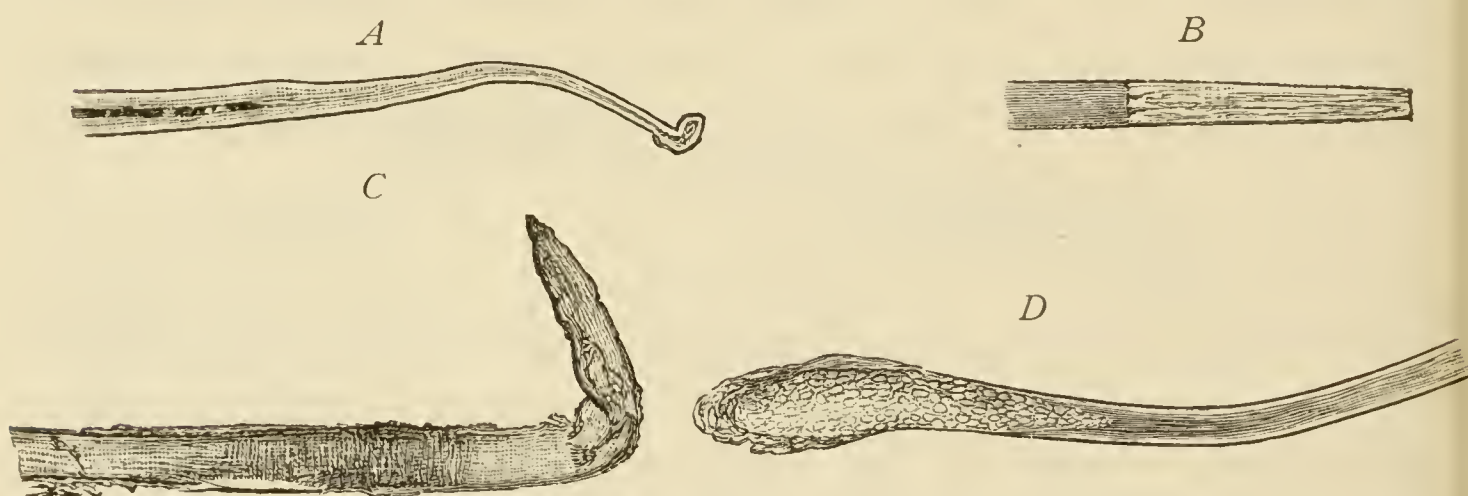


Fig. 80.—Dr. McMurray's case of end atrophy of the hair.

D. Root end of one of the hairs, showing the hair bulb permeated with air bubbles. This drawing was made by reflected light, the other figures by transmitted light.

of all affected hairs, if on the head, and sponging the rest with antiseptics, such as 1 in 40 carbolic lotion, or 1 in 2000 perchloride of mercury, would be the treatment indicated for the head, but it is strange that shaving is not more uniformly successful when the beard is affected.

End Atrophy.‡ W. McMurray of Sydney sent me some hairs with the condition as figured, the ends showing thinning and fracture. Some of the root ends were infiltrated with air, which

* Abs. *Jour. des Mal. Cut.*, vol. xi. (1899), p. 205.

† Notes, F. 878.

‡ *Australian Medical Gazette*, July, 1892, p. 280.

it seemed probable was the immediate cause of the atrophy. McMurray, in his account of the case, stated that the distal end appeared of a lighter shade and bulbous; in that case, it would appear that the atrophic ends I examined had broken off on the proximal side of the bulb.

Monilithrix. (*Synonym.*—Moniliform or beaded hair.) This is an extremely rarely recognised condition, of which the first description was published by Walter Smith* of Dublin and McCall Anderson. Smith described two cases of his own, and one of Liveing's; since then Lesser,† Payne,‡ Luce,§ Abraham, Schütz,|| Colcott Fox, Breda, Archambault, Hallopeau, Beatty,¶ etc., have published cases, and Thin's case,** shown at the Congress of 1881 in London, presented a closely analogous, if not identical condition.

Several members of the same family were affected in the cases related by McCall Anderson †† and Fox and Sabouraud. Breda's case was an epileptic, and the formation of freshly affected

* "A Rare Nodose Condition of the Hair," *Brit. Med. Jour.*, vol. ii. (1879), p. 291, and vol. i. (1880), p. 654.

† "Ueber Ringelhaare," *Viertelj. f. Derm. u. Syph.*, vol. xii. (1885), p. 655, and vol. xiii., p. 151, with plate of the same case, a girl, æt. four and a half years; he mixes it up with the cases of ringed pigmentation.

‡ Payne, "Hairs showing Nodose Condition," *Path. Trans.*, vol. xxxvii. (1886), p. 540, with plate. There were two cases, brothers, æt. one and two years.

§ Luce's case, quoted in Ziemssen, p. 410, in connection with delayed hair development, is another instance.

|| Schütz, in recording another case of three and a half years, acquired in Cairo, gives copious bibliography, but includes ringed hair. *Archiv f. Derm. u. Syph.*, vol. liii. (1900), p. 69, with plate. The hair was spirally twisted, and there were spindles in the intrafollicular portion. There was keratosis at the mouth of the follicle. Pernet in examining Abraham's case came to the conclusion that the spiral twist was an optical illusion.

¶ Wallace Beatty and Alfred Scott wrote a paper in *Brit. Jour. Derm.*, vol. iv. (1892), p. 171. They give the abstracts of twenty-four cases besides their own, and consider the affection due to a tropho-neurosis. They describe the inner root sheath as thickened at the internodes. Francis's case is in vol. vi., p. 363.

** Vol. iii., p. 190, of the *Trans. Internat. Med. Cong.*, 1881.

†† A remarkable family chart is recorded in Anderson's *Diseases of the Skin*, p. 56, fourteen out of twenty-seven individuals in six generations having been affected; but this is beaten by Sabouraud, with seventeen cases in five generations, in *Ann. de Derm. et de Syph.*, vol. iii. (1892), p. 830.

hairs coincided with the fits. Francis's case followed influenza, when the girl was fifteen.

In this affection, there is a regular succession of fusiform nodes connected by narrow portions, giving a very distinctly beaded appearance, and extending from root to tip (fig. 81). Nearly all the pigment is concentrated in the nodes, the internodes being almost colourless—hence resembling, in that point, the alternating rings of colour already described; but in that affection, with which Lesser has confused the one under consideration, there is no structural alteration. Nearly all the cases have occurred in childhood, or infancy, and most are probably congenital. The hair breaks off short, but always at one of the internodes, with a brush-like ending, and, all over the head, it is only about one to three inches long.

In Francis's case, the nodes and internodes were only arranged regularly in a few of the most affected hairs; in others, there



Fig. 81.--Moniliform hair. Obj. 1 in., ocul. Zeiss 3 in.

The illustration is taken from a hair kindly given me by Dr. Walter Smith.

was great variability in the number and arrangement of the nodes. Some hairs were unaffected, and there was no keratosis.

Gilchrist * records a case in which moniliform hairs were found on the lower limbs at the periphery of some bald patches which formed at the age of seventeen in a healthy youth. Pernet found that the eyebrows and lashes were moniliform in Abraham's case.

The disease is due to defective development during the formation of the internode, while the nodal part is probably normal, or nearly so, in diameter. Fox found that the beaded arrangement extended quite down to the root of the hair. It affects not only the scalp, but both the fine and coarse hairs all over the body. Brocq says that keratosis pilaris is present in these cases, but it is not present in all, and when it is, C. Fox considers it to be secondary. There is nothing to be done in congenital cases, but, when acquired, efforts should be directed to the rectification of any defect in the general health, and local stimulation of the scalp with the faradic brush.

* *Amer. Jour. Cut. Dis.*, vol. xvi. (1898), p. 157.

CANITIES.*

(Hoariness, from *canus*, grey-haired.)

Synonyms.—Greyness of the hair; Whiteness of the hair; Atrophy of hair pigment; Blanching of hair; Trichonosis cana; Trichonosis discolor; Poliothrix.

Canities may be simply one of the evidences of senile decay, or may occur early in life. There are all grades of it, both as it affects the hair individually and collectively.

Collectively, it may exist pretty uniformly mixed with the normal colour in one or more regions; or there may be one or more tufts of white, giving a piebald appearance; or the head may be quite white and the hair only grey elsewhere; or there may be blanching of the whole hairy system.

In some cases, the whiteness is only temporary; thus Wilson relates a case where the hair was grey in winter and recovered its colour in the summer. Sir John Forbes also had grey hair for a long time, then suddenly it all turned white, and after remaining so for a year, it returned to its original grey.

Griffiths of Louisville relates the case of a man, æt. sixty-five; originally his hair was blonde, it became grey when fifty-seven, and for three years had been quite white. He was exposed to intense cold, as a fireman for many hours, his head being well covered with a skull cap and helmet, and twenty-four hours later his hair became black and oily. In alopecia areata, the new hair is often white at first, but it nearly always regains its colour.†

While canities is generally slow of development, it may be quite sudden, *e.g.*, in a few hours. Hebra and Kaposi disputed this on theoretical grounds; but apart from historical instances, the following well-authenticated occurrences, while under medical observation, are conclusive on the point.

In Landois' case,‡ the hair of the beard and head of a delirium

* *Literature*.—Wilson's *Lectures on Derm.*, 1878, p. 166, *et seq.* Landois, "Das plötzliche ergrauende Haupthaar," Virchow's *Archiv*, vol. xxxv. (1866), p. 575, with plate, contains numerous references.

† *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. xiii. (1895), p. 376. He refers to several interesting cases of canities, and quotes the case of a woman whose hair, during a fever, became white in a week, and recovered its colour in another week.

‡ *Loc. cit.*

tremens patient became grey in the course of a night while he was in the hospital. Brown-Séguard observed, in his own person, that a few hairs daily became white, and in Raymond's * case, observed with Vulpian, the patient was a lady of neurotic type, who after mental strain had intense neuralgia; during a severe paroxysm, the hairs changed colour in five hours, all over the scalp except on the back and sides, most of them from black to red, but some to quite white; and in two days all the red hair became white, and a quantity fell off. She recovered her general health, but with almost total loss of hair; only a few red, white, and black hairs remaining on the temporal and occipital regions.

The case of a Spanish cock, which was nearly killed by some pigs, is also to the point. The morning after the adventure, the feathers of the head had become completely white, and about half of those on the neck and back were also changed.

Cases somewhat less sudden are more common. B. Thornton of Margate records the case of a lady in whom the hair of the left eyebrow and lashes began to turn white a fortnight after a sudden grief, and within a week all the hair of these regions was quite white, and remained so; but no other part was affected, nor was there any other symptom.

In Ledermann's case, a man, æt. twenty-four, the hair all over the head and body turned white in six weeks without apparent cause.

In Pincus's case, a man of thirty, the hair immediately turned white and remained so from the shock of a sudden grief. In a case of Gowers's,† half the beard and moustache became white from meningeal hæmorrhage; he died three days after the injury; between the normal brown and abnormal white was a narrow median zone of almost black hair.

R. Jones ‡ of Claybury asylum related the case of a melancholic patient in whom the hair became completely white all over the body in five weeks. The root-ends were atrophic, and the distal third infiltrated with air.

Individually, a hair may be quite white, or, as I have seen it after alopecia areata, it may be coloured near the root and white at the distal end, the pigment extending farther in the medullary

* Quoted in *Lancet*, October 14th, 1882.

† *Lancet*, November 2nd, 1901, p. 1173.

‡ *Lancet*, March 1st, 1902, p. 584.

than in the cortical part (fig. 82). The reverse of this is seen in the preparation No. 363, in the Museum of the College of Surgeons, the part near the root only being white, while the distal end is coloured. It formed a narrow horse-shoe band round the head, in a girl, æt. seven years. Richelot observed a similar phenomenon, in patches, in a girl with chlorosis; the newly formed hair becoming again pigmented when the chlorosis was cured. In Falkenstein's case, a man, æt. thirty-three, many of the hairs were white in the upper and dark in the lower part, in various proportions; a few



Fig. 82.—Hair from a case of alopecia areata during recovery, becoming gradually pigmented.

were white top and bottom, with a brown band between, up to half an inch wide.

Ringed Hair. A hair may also be white or coloured in rings or bands, but this is very rare. In a case of E. Wilson's,* a boy, æt. seven, every hair was affected; the brown segment was double the length of the white one, together measuring one-third of a line, and Wilson thought the dark represented the day's growth, and the white that of the night. A specimen of a similar defect is in St. Bartholomew's Hospital Museum. In a case reported by Karsch† of Münster, a youth of nineteen, all the hairs were not the same, the rings were not all of uniform diameter, being closest and narrowest in the middle of the shaft, whilst some hairs were half white and half brown, and some all white or all brown.

A case very analogous to that of Karsch came under my notice. It affected the moustache of a gentleman, æt. thirty-nine, and was associated with trichorrhexis nodosa. The hairs were affected in various degrees (fig. 83). Air bubbles were in stellate heaps round the medulla at regular intervals in some hairs, but not in all, and the pigmented portions were much longer than the unpigmented areas.

In a girl of seven,‡ the scalp hair had been affected two years

* Wilson's Lect., *loc. cit.*, No. 367-8, Coll. of Surg. Museum.

† *De Capillitii Humani Coloribus quædam. Diss. inaug. Gryphiæ*, 1846. Quoted in full by Landois, *loc. cit.*, with plate and microscopic description.

‡ Private Notes, E. 759. Described in detail *Brit. Jour. Derm.*, vol. v. (1893), p. 175. In vol. viii. (1896), p. 437, Galloway reports the disease in two brothers of eight and ten years, in whom it was apparently congenital; and in vol. xiv., p. 86, Meachen reports a case, with references to eight cases.

when I first saw her ; it came on after influenza and contagious ophthalmia, and five years later it was universal and unaltered in character. The hair from just above the root to the end showed a series of dark patches like fig. 83, by transmitted light, and white by reflected light, due to air bubbles; with the intervals normal. The diameter of the shaft was uniform, but the hair was dry and lustreless, and did not grow for more than eight inches.

Etiology.—Sex has no influence. It is uncommon before the patient has grown up, but it is seen in children occasionally, and a few cases with one or more white tufts have been congenital, and even hereditary through several generations (Morgan, Joynt). The youngest idiopathic case in my practice was nine years old, and limited to a single patch. It may be seen in a single patch also after long-continued and severe neuralgia, in multiple symmetrical

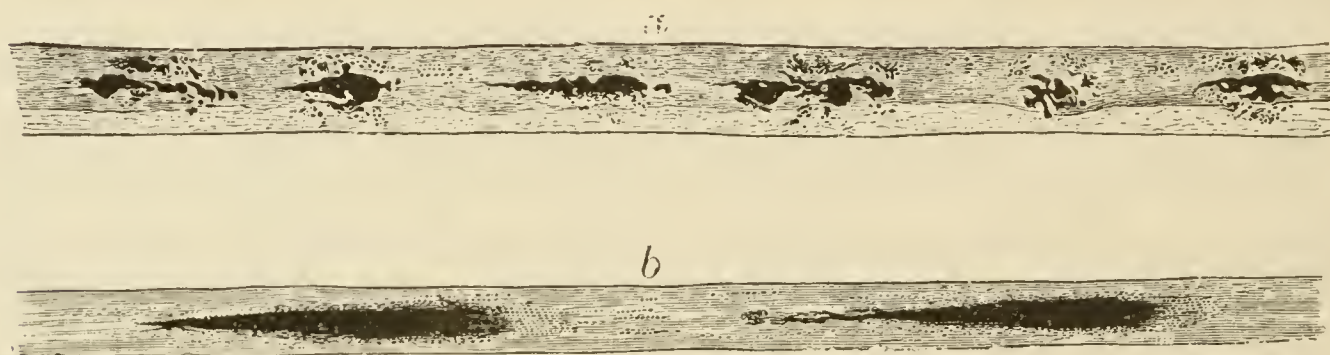


Fig. 83—Ringed hairs. $\times 125$.

a, from moustache ; *b*, from scalp of another patient, viewed by transmitted light.

By reflected light the darkest parts are shown to be air, the pigment being between these collections of air globules ; the diameter of the shaft is slightly increased where the air is situated.

patches as a part of leucodermia, and as irregular piebaldness during recovery from alopecia areata. The lower grades of grey hair, and more rarely complete canities, are seen after specific fevers, especially scarlatina and typhoid, and after any prolonged strain or drain, mental or bodily, of the general system.

Premature greyness is also frequently due to family predisposition. The influence of a nervous shock, especially from intense fear or grief, both for gradual and rapid blanching of the hair is generally admitted, *e.g.*, rapid whitening of the hair has been observed in some who suffered from melancholia. Another instance of nerve influence is, when the eyelashes have turned white in sympathetic ophthalmitis, after destruction of the opposite eye. Instances are reported by Nettleship,* Hutchinson, Jacobson, etc.

* *Lancet*, December 22nd, 1883, Rep. of Ophthal. Society.

Pathology.—Ehrmann's explanation of the mechanism of hair pigment discoloration has already been set forth under the pathology of pigmentation in general, and is probably the correct one for senile and other gradually developed canities; but the theory of Landois and others, that air bubbles form in the substance of the hair, enough sometimes to produce perceptible bulgings and to conceal the pigment, which, however, is still present, best explains the cases of sudden blanching.

Prognosis.—As a rule, the prognosis is bad; the hair generally remains white for the rest of life; still, as will be seen from the cases related, recovery of the normal colour does occur, and is most likely to happen when the colour has been lost after some severe illness, or some other definite and remarkable cause. A remarkable case of restoration is related by W. O'Neill* of Lincoln. A man who was both bald and grey, æt. fifty-nine, became suddenly hemiplegic, and remained so; three and a half years later dark hair began to grow on the bald patch, and the grey hair of the head and beard began to fall off, and was replaced by dark brown hair, until the whole head and beard were the same as when a young man. The man was a great chlorodyne drinker.

Even in congenital cases, with tufts of white hair, it has in a few instances become coloured. Unless the patient is over fifty, canities after alopecia areata is generally only temporary. Where there is a hereditary tendency to early greyness, the prospect of recovery is very slight.

Treatment.—But little can be done by way of treatment; no drugs or treatment have any direct influence on pigmentation production or distribution in the hair. Where it has arisen from exhausting disease or nervous strain, general tonics and hygienic measures may lead indirectly to restoration. Hypodermic injections of pilocarpine nitrate or hydrochlorate gr. $\frac{1}{10}$, gradually increased, or tincture of jaborandi mx and upwards internally, might be tried. Faradisation with the wire brush electrode also offers a chance for some cases. Arsenic and nux vomica as nerve tonics may be of some service. Dyeing the white hair may sometimes be an improvement.

* *Lancet*, July 20th, 1889. See also cases by Graves, *Studies in Physiology and Medicine*, 1863, p. 335.

DISCOLORATION OF THE HAIR.*

Several instances of change of colour, other than canities, are on record. One of the most remarkable is Prentiss's case. The patient was suffering from pyelo-nephritis and anuria, for which pilocarpine hydrochlorate was subcutaneously injected for over two months. At the end of twelve days the hair, which was light blonde, began to turn, and continued to get darker for some time after the medicine was stopped, and at the end of six months had become nearly jet black, both on the head and axillæ; the hair was also coarser, and the eyes had changed from light to dark blue.

Alibert and Beigel relate cases of women with blonde hair which all came off after a severe fever (typhus in one case), and when it grew again was quite black. Alibert also saw a case of a young man who lost his brown hair after illness, and after restoration it was red. In an epileptic girl of idiotic type, with alternating phases of stupidity and excitement, in an asylum at Hamburg, the hair in the stupid phase was blonde and in the excited condition red; the change of colour taking place in the course of two or three days, beginning first at the free ends, and remaining of the same tint for seven or eight days. The pale hairs had more air spaces than the darker ones. There was much structural change in the brain and spinal cord. Smyly of Dublin reported a case of suppurative disease of the temporal bone, in which the hair changed from a mouse colour to a reddish-yellow; and Squire records a congenital case in a deaf mute, in which, on the left side, the hair was in light patches of true auburn and dark patches of dark brown, like a tortoiseshell cat; on the other side, the hair was dark brown. M. Mayer's case was a boy whose hair was a clear blonde, but at the junction of the hair and nucha there was a band of reddish hair about two fingers in width. This was the third occasion in which the phenomenon had appeared. The first was two years ago, during convalescence from an illness, and the discoloration lasted about three weeks; it recurred in six months, and this last time had

* *Literature*.—See paper by G. F. Jackson in *Amer. Jour. of Cut. and Ven. Dis.*, vol. ii., p. 173. *Phil. Med. Times*, 1881, xi. 609. *Lancet*, June, 1881, quoted by Landois, pp. 583-4. Changes after death from dark brown to red, and from red to grey, have occurred in rare instances.

lasted three weeks. Analogous conditions sometimes occur in lunatics.

Accidental discolorations occur of various tints, *e.g.*, blue hair is seen in workers in cobalt mines and indigo works ; green hair in copper-smelters ; deep red-brown hair in handlers of crude aniline ; and the hair is dyed a purplish-brown whenever chrysarobin applications, used on the scalp, come in contact with an alkali, as in washing with soap.

ALOPECIA.

Deriv.—*ἀλώπηξ*, a fox, because partial baldness is common in that animal.

This is the generic term for all kinds of baldness, irrespective of the cause.

It may be complete or partial, and the latter may be in the form of general or local thinning ; or in bald areas of various size.

The varieties of baldness are classified etiologically into congenital, senile, and premature, the last being idiopathic or symptomatic.

Congenital Alopecia. Although known to Hippocrates, this condition is rare, and when present is seldom complete, the hair being only scanty, patchy, or lanugo-like. Unless the hair follicles are absent, as in the complete cases of Schede* and Ziegler† The baldness is seldom permanent, partial or complete growth usually taking place eventually. The skin itself, where the hair ought to be, may be normal, or there may be abnormalities of development in the skin as a whole, in the nails or in the teeth, and the secretions of the skin may be defective. A family predisposition to a scanty development of hair is not uncommon, and extreme abnormalities of the same character have been noted in members of the same family, for several generations. There are even races like some Australian aborigines who are hairless. Illustrative cases and references are given in the footnotes.‡

* *Archiv f. klin. Chir.*, Bd. xiv. (1872), p. 158.

† *Archiv f. Derm. u. Syph.*, Bd. xxxix. (1897), p. 213. Three coloured plates of sections of skin ; numerous references to date.

‡ Thurnam, *Med. Chir. Trans.*, vol. lix. (1886), p. 473. Two cousins who had each only a lanugo growth on the body and head, only four teeth (molars), and who never perspired or shed tears. He quotes other cases. A girl of four years came under me who had been born without hair or nails, the

Senile Alopecia (Senile Calvities). Here, as Pincus and Neumann have shown, the loss of hair is only a part of the general atrophy of the skin structures. The age at which it comes on varies greatly, and all the other hairy regions of the body which share in the cutaneous atrophy are affected, but rarely to so marked a degree as in the scalp.

Seborrhœa is also an important factor in a large proportion of cases.

The baldness begins first at the posterior part of the vertex, and then spreads forwards and backwards until the whole crown is denuded, leaving only a fringe of greater or less width at the sides and back.

The theory to explain this distribution is that the scalp at the crown is much thinner than at the sides, and that the nutrition of the hairs at the vertex is therefore more easily interfered with. A similar explanation is put forward to account for the comparative rarity of senile baldness in women, their scalp being thicker and containing more fat.

Idiopathic Premature Alopecia (Alopecia Simplex). As a rule, nails began to grow but abnormally in a week, the hair not for three years, and there was atrophy of the skin generally. In my Atlas, plate xc., fig. 13, her nails and hand are shown, and there is an account of the case. In Hutchinson's case, also a boy, æt. three and a half years, there was congenital baldness of the scalp and atrophy of the skin generally and absence of the mammary glands. The mother had been bald from alopecia areata from the age of sixteen years. *Med. Chir. Trans.*, vol. lix. (1886), p. 473. In Paul de Molène's case there was no abnormality besides the baldness (there was a scanty fine down even at birth), but the mother had had alopecia areata for three years when nineteen years old, and her son when six years old also had alopecia areata. *Annales de Derm. et de Syph.* vol. i. (1890), p. 548, several references. F. Pincus in recording a case gives full bibliography. *Archiv f. Derm. u. Syph.*, vol. l. (1899), p. 347. Audry, *Mal. Cut.*, vol. xiv. (1902), p. 9, records four cases of his own. Nicolle and Halipré relate that in one family there were thirty-six individuals in six generations with defective hair and nails. Some were born without hair or nails, others had lanugo growth and defective nails with or without chronic onychitis. *Annales de Derm. et de Syph.*, vol. vi. (1895), Aug.-Sept. *Abs. Brit. Jour. Derm.*, vol. viii. (1896), p. 417. Charles J. White met with a similar series of cases, but not so extensive, presenting similar clinical features. *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. xiv. (1896), p. 220, with photographs. Hill, J. H., "Hairless Australian Aborigines," *Brit. Med. Jour.*, vol. i. (1881), p. 177. I have a photograph of an adult African negro absolutely hairless from birth. It was sent me by a former pupil, but I have lost his letter with notes of the case.

in this form, the distribution is the same as in senile alopecia, but sometimes the loss begins at the temples, the hair line receding until there is only a central crest left, which also ultimately disappears.

It may begin at any time after puberty, though not often before twenty to twenty-five years of age; this again is much less frequent in women.

According to Pincus, instead of being, like the senile form, a part of the atrophy of the whole skin, there is increase of the connective tissue, which contracts and compresses the hair follicle, and thus produces its atrophy.

There are, however, very strong reasons for believing that idiopathic baldness is exceptional, nearly all being really due to seborrhœa. In this I agree with G. T. Elliot,* who examined carefully 344 cases in his private practice of premature baldness, and deducting 24 cases due to general conditions, found seborrhœa, or, as he calls it after Unna, eczema seborrhoicum, in 316 cases, and that 64 per cent. occurred under thirty years of age. Four cases showed heredity as an uncomplicated factor, but there can be no doubt that seborrhœic baldness may be observed to affect the males of a family at an early age for several generations, often also with premature greyness. Probably what is really inherited is a tissue similarity favourable to the growth of the seborrhœic microbe.

Symptomatic Premature Alopecia. This may be temporary or permanent, the loss may be either sudden or gradual, and dependent upon local or constitutional causes. From constitutional causes, it is seen after or during a severe illness, especially fevers, in cachectic conditions, such as phthisis, diabetes mellitus, myxœdema, syphilis, leprosy, etc., or it may be of neurotic origin, as after violent shocks, or intense or prolonged anxiety.

The local causes are very numerous, the most common being—

1. Seborrhœa of the scalp, which may lead to permanent baldness; women are as liable to it or even more so than men, it being the chief of all causes in both sexes.

2. Most inflammatory diseases of the scalp, if severe or prolonged enough, such as erysipelas, small-pox, psoriasis, eczéma, etc. The loss varies with the severity of the affection, and is

* *New York Medical Journal*, October 26th, 1895.

usually recovered from after the removal of the primary affection, unless suppuration has been so free as to destroy the follicles.

3. It may be seen in lupus erythematosus, in morphœa, and in folliculitis decalvans; in all these, the baldness is permanent.

4. Brocq * considers that the keratosis pilaris seen in ichthyosis may in some cases affect the scalp also, and lead to permanent atrophy of the follicles, and falling out of the hairs involved, which are replaced by lanugo hairs, round which slightly reddened papules may then be visible. It is, he thinks, a fruitful cause of baldness in infancy, adolescence, and even maturity, and may occur without ichthyosis. He considers the ulerythema ophryogenes of Taenzer is a form of this keratosis pilaris capillitii, of which the ultimate result is a cicatricial atrophy of the skin, and that monilithrix is also due to it.

5. In parasitic diseases, such as tinea tonsurans, where the loss is temporary only, except after severe kerion; and in favus, where the loss is often permanent, owing to pressure atrophy, produced by the favus cups.

6. Syphilis may produce it either early in the disease, as a part of the general cachexia, or consequent upon some eruptions of the scalp, while in the later stage it may be due either to seborrhœa, which is a very common affection after syphilis, or from ulcerative lesions.

In the first two, the loss is only temporary, and causes a general thinning, with lack of nutrition, shown by the straight, dry, and lustreless condition of what remains. In the latter forms, it may be permanent from seborrhœa, and will certainly be so after ulceration.

7. Local injuries—a blow producing a bruise, the sting of a bee (Wilson); friction—*e.g.*, from the headgear in women, or from their straining the hair in abnormal directions.

8. Both the neurotic and parasitic forms of alopecia areata.

9. The administration of thallium acetate for the excessive sweating of phthisis has been followed by extensive loss of hair all over the body, in so many instances, that there can be no doubt that it was due to the drug. Giovannini could find nothing by microscopic examination in the skin or hair to account for it. The loss is only temporary.

* *Ann. de Derm. et de Syph.*, vol. iii. (1892), pp. 773 and 1197; also in his treatise, p. 384.

ALOPECIA SEBORRHOICA.

Although the subject of seborrhœa has already been discussed (p. 1042), its importance as a cause of premature baldness is so great, that some points deserve further attention in this section of diseases of the hair. As here employed the term is not restricted to the oily form. The distribution of seborrhœic alopecia is the same as that described under so-called idiopathic baldness, namely, the temples, vertex, and the frontal hair line.

This distribution is combined with the presence on the scalp of either an excessive greasiness of the surface from oily seborrhœa; or fine glistening powdery scales; or greasy scales lying closely on the scalp and requiring to be scraped off; yellowish fatty matter, looking like pale yellow wax, sometimes evidently largely made up of scales, at others, giving the impression of being only dirty yellowish wax. The waxy substance can easily be scraped off with a blunt instrument, the skin beneath being white and shiny. This abnormal secretion is most marked on the vertex, being rubbed off in washing at the temples and forehead, and being absent or scanty as a rule at the occiput and sides, parts which rarely become bald from seborrhœa alone, *i.e.*, without active accompanying inflammation, although in long-standing cases considerable reduction in the width of the remaining fringe may take place.

I have, however, seen general thinning in a young man reaching down to the lowest border all round in a seborrhœa in which the fatty deposition was limited to the infundibular orifice of the hair follicles, and from many of which a comedo-like plug could be expressed.

I have also seen a few cases of a sickle-shaped alopecia just above the ear, with marked horny sebaceous plugging at the follicular orifices, seborrhœa of the vertex being also present.

In some of the most troublesome cases of general progressive thinning, there is nothing but a true seborrhœa oleosa, the scalp being constantly bathed in oily secretion of a dirty yellow colour when scraped off. Both in this and in the drier form, there may be very marked funnel-shaped depressions round the hair follicles which are filled with fat. In some cases, the seborrhœa is limited to these depressions, the surface being clean. Although this

cupping at the hair follicles occurs chiefly in severe cases, it may be partially or completely recovered from.

According to Sabouraud, this oily form occurs almost exclusively in males, but this is by no means the case in my experience, as I have met with it fairly frequently in women and even girls under twenty-one; and although there is not complete calvities as in men, the thinning is very conspicuous when no artificial supplements are used, and it is the form most rebellious to treatment. I also do not consider that there is any real etiological distinction between temporal and coronal baldness. Although the temporal denudation is often more advanced in degree, the vertex is always more or less thinned also, and is on its way to being completely bare.

Pathogeny.—On clinical grounds the presence of micro-organisms with a pathogenic rôle has long been inferred.*

Bacteriology.—Malassez as far back as 1874 described minute oval and round spores which were abundant in the horny layers and penetrated into the follicle nearly as far as the sebaceous orifices. Bizozzero (1884) confirmed this, and has been followed by Boeck, Pikkelharing, and others.

Then came Unna (1890),† who with improved knowledge and means of investigation, while confirming previous observations, showed that the organism should be referred to the schizomycetes, and named the chief organism from its shape, the flask or bottle bacillus. There is also a tiny bacillus to be found in the sections. Van Hoorn has gone over the same ground, and found the same organisms, and described the small bacillus, which he cultivated, as very abundant and constant in the scales and hair follicles.

W. H. Merritt ‡ (1895), working on G. T. Elliot's cases, describes two kinds of diplococcus morphologically similar, but while both are aerobic and non-liquefying, No. 1 is non-chromogenic, and No. 2 is chromogenic. Inoculation with No. 1 produced a reddened area with dry white scales; with No. 2 yellowish spots appeared, resembling some forms of seborrhœa; and with a mixture of 1 and 2 on the fourth day, gave rise to areas with typical crumbly greasy scales. He also found a bacillus with rounded ends, but probably of non-pathogenic influence. These experiments would seem to settle the matter conclusively, and the yellow colour often seen would be accounted for by No. 2 § diplococcus, but another organism was described

* Yet Sabouraud says that before he demonstrated his microbacillus in 1897, neither he nor any one else "had the idea that calvities could be a microbial disease."

† *Histopathology*, p. 233.

‡ *New York Med. Jour.*, October 26th, 1895.

§ In the Museum of the Coll. of Surg., No. 341, Derm. Series, there is some hair of a lady, æt. eighty-two. The white hair is stained golden yellow by an abundant gummy secretion from the scalp. It came on after an attack of jaundice, and had persisted for five years. It also stained her linen and had a disagreeable odour.

by Sabouraud * (1897), after laborious researches, and he affirms that the specific organism is a micro-bacillus (the acne bacillus of Unna), punctiform and very like a coccus in its young forms, but in its adult form it is one μ long and a half μ in diameter. It is best stained by the Gram-Weigert method.

This he has succeeded in cultivating in a special acid peptone-agar medium, but not always in pure culture from the first. The yolk of egg is also an excellent medium. Whether in oily seborrhœa of the scalp, the face, or in the comedo, this micro-bacillus is the one fundamental organism. I am glad to find he emphasises what I had observed clinically, that the pure oily seborrhœa capitis was the most destructive to the hair and the most rebellious to treatment. In the more waxy forms, there is a mixture of the oily seborrhœa and scales, and then there is present not only the seborrhœic micro-bacillus, but the bacillus spores of Malassez, which is the bottle bacillus of Unna, and a staphylococcus.

In the scaly form, there are innumerable corneous scales, pityriasis or seborrhœic eczema of Unna, but no seborrhœa, therefore, no micro-bacilli, but bottle bacilli and cocci.

The above may be put almost algebraically: mb = oily seborrhœa; mb+bb = waxy seborrhœa; bb+sc = pityriasis without seborrhœa. Q.E.D. Sabouraud. Yet Jacquet holds that the increased oily secretion is a normal result of puberty, and the bacilli are therefore banal organisms. Their constancy under the above conditions contradicts this, replies Sabouraud.

The mechanism of seborrhœic alopecia as unravelled by Sabouraud is as follows: The specific micro-bacillus invades the follicle by the follicular orifice, it multiplies and forms a thin lamina made up of microbes which separate the hair shaft from the wall of the follicle, and descends almost to the level of the orifice of the sebaceous duct.

The epithelial irritation excited in the neighbourhood produces horny layers which encyst the microbial colony, and form what Sabouraud calls a cocoon, which is attached to one side of the hair shaft. The consequences of its presence manifest themselves in sebaceous hypersecretion followed by glandular hypertrophy to three or four times the normal size, and progressive atrophy of the hair papilla. Lymphocytes and giant cells in small quantity are found round the microbial utricle, round the neighbouring vessels, in the angle of the arrector pili and shaft, and round the base of the follicle and the papilla. The functions of the latter are interfered with, the pigment is no longer conveyed to the hair cells, the medullary cells of the shaft are no longer produced, the diameter of the shaft is diminished, and hence the adult characters of the hair are lost and the new hairs have neither pigment nor medulla; finally, even this weak substitute is not produced, hair production ceasing altogether and the papilla itself disappearing.

Unna† explains the process differently. The follicular orifice is dilated by abnormal horny layers round the hair into an infundibulum, with its apex at the mouth of the sebaceous glands. The root sheath is retained

* *Les Annales de l'Institut Pasteur* (1897). See also his "Seborrhée, Acnés, Calvitie (1902), p. 164.

† *Histopathology*, p. 234.

in the follicle and thrown into folds which press on the hair and tend to loosen it. The sebaceous glands are very little altered at first, but ultimately their secretion is arrested, and the gland is distended as the secretion cannot escape as it should.

The loss of hair is not due to loosening of the root-sheath or atrophy of the papilla. The causes are due to changes in the upper and middle layers of the follicle, leading to diminished hair formation, and not to atrophy of the papillary hairs. New smaller papillæ are formed, or there may be a shortened old epithelial process with a remnant of the papilla, a lanugo hair only resulting, and from the increasing difficulty of hair formation it ultimately reaches the vanishing point.

The hairless follicles are finally converted into sebaceous glands, and sometimes into sebaceous cysts.

Personally I incline to Sabouraud's explanation, but it has not as yet quite acquired the status of a dogma.

Prognosis.—Seborrhœic alopecia if untreated goes on, slowly as a rule, but surely, until the whole vertex is denuded of hair, a fringe of hair being left at the sides of varying width in different cases, but wider behind. Under treatment the result varies according to whether the patient seeks advice early or late in the disease. In the latter, more or less of the vertex may be permanently bald, while the process in the remaining hair may be arrested and a little renewed hair be obtained. In an early stage, there may be almost complete restoration of the shed hair, but inasmuch as the disease is due to a tissue proclivity to a microbe, and this is deep down in the upper part of the follicle, a lasting cure is rarely obtained, and the patient has to apply a microbicide once or twice a week for an indefinite period after the daily treatment has produced an apparent cure.

Treatment.—The principles of such an internal treatment as may be required in some cases, is referred to in the chapter on Seborrhœa, and only the special measures for the scalp which are usually all that is required will be discussed here.

Applications may be made in the form of ointments or lotions, and they are all, in these days, microbicides. The time-honoured cantharides occupies a very subordinate position, for, as a rule, if the microbe and its immediate consequences are removed, the hair is nearly always ready enough to grow. The great majority of patients infinitely prefer lotions to ointments, and as it is often difficult to make them use ointments for any length of time, I generally prescribe lotions.

If there is present a fatty or waxy seborrhœa, a preliminary cleaning with soft soap, spirit, and thymol (F. Lotions 8) is desirable to facilitate the absorption of the watery lotion. It may be repeated once in two or three weeks. After rubbing it on with wet flannel it should be rinsed off with tepid water, the hair dried, and one or other of the following lotions immediately sponged in:—

The formulæ that may be written for the daily lotion are very numerous, and I will only give a few which I have found useful.

Acidi acetici ℥ss, resorcin ʒij, eau de Cologne ʒij, aq. rosæ ad ʒviij; ol. ricini ʒss mixed with the eau de Cologne, or a little glycerine may sometimes be added. The hair should be parted in small portions and the lotion well rubbed in to the scalp with flannel or sponge, the greatest attention being paid to the vertex and its neighbourhood.

Sodæ sozoiodolatis ʒij may be substituted for the acetic acid and resorcin. Sodæ hyposulphis may also be used, but the nascent sulphur lotions are still better (F. Hair Lotions 51). The sozoiodolate and nascent sulphur lotions are preferable for the oily forms to the acetic acid and resorcin, which acts best in the drier form. Where there are signs of commencing inflammation of the scalp a lotion of glycerini plumbi subacet. ʒi, liq. carb. detergens ℥ss, aquæ rosæ ad ʒviij is often one of the best applications.

Sometimes when the scalp is very dry it is desirable to prescribe a pomade to be used whenever the head is shampooed, such as hyd. perch. gr. i, aqua rosæ ʒj, lanolin ʒij, adipis ad ʒj, or, hydrarg. biniodidi, pot. iodid āā gr. ij, with the same vehicles. Here it may be observed that daily washing of the head as practised by many men is nearly always injurious.

When ointments are prescribed they are generally some preparation of mercury, the diluted nitrate, yellow oxide, or ammoniated mercury, or they may contain sulphur, resorcin, or salicylic acid. Vasogen iodine 10 per cent. ʒj, heavy paraffin oil ʒj, is often serviceable.

A good formula for obstinate cases in the scalp I have found to be ung. hyd. nit. ʒj to ʒiv, ol. cadini ʒj, ol. olivæ ʒij, lanolin ʒiv, misce; this is to be well rubbed in every night, and, if the daily avocations require it, washed off in the morning with borax ʒij, to water Oj, and then a little almond oil may be rubbed in,

or the ung. hyd. oxid. flav. may be used instead of the nitrate, with or without the oil of cade. Where there is hyperæmia, a soothing remedy may be necessary at first.

ALOPECIA AREATA.

Synonyms.—*Porrigo decalvans*; *Tinea decalvans*; *Area Celsi*; *Alopecia circumscripta*; *Fr.*, *Pelade*.

Definition.—An acutely produced baldness, with complete denudation of the affected parts, primarily in round patches, but which may spread into large areas, or even over the whole hairy system.

At least four classes of cases are recognisable under the term alopecia areata.

In the first, are universal cases, usually of rapid development, and not necessarily in patches.

In the second, are those cases with one or more patches in the course of a nerve, or on the site of an injury.

In the third, are cases of the common type, in patches or bands of irregular distribution, and with characteristic (!) hairs at the border of the spreading patches.

In the fourth, seborrhœa capitis is a very conspicuous feature, and is probably in etiological relationship.

The first two classes are undoubtedly of tropho-neurotic origin, and the third and fourth are, in my opinion, parasitic, and form the largest proportion of the cases.

The first two therefore form a group which might be comprised under the head of "**Alopecia Neurotica**," with sub-groups *universalis* and *localis*, and the last two would form a group of **alopecia parasitica**, one of which is certainly of seborrhœic origin, and Sabouraud says both are so.

Class I., Alopecia Universalis, comprises those cases in which the alopecia is universal, and in which the hair does not necessarily come out in patches, but there is general falling off, often very rapid, and accompanied in some cases by changes in, or even falling off of some or all of the nails, as in the following instance. A boy, aged eight years, without any apparent cause or preceding ill-health except a poor appetite, within ten days lost the whole of the hair all over the body, together with all the

finger and toe nails. Three years later, when I saw him, there was not a hair or nail present, and the nail bed was rough and irregular, as if the nail had been torn off, leaving a little horny matter behind. In a second case, a boy of fourteen, the whole of the hair had come off some time previously, soon after a fall from a tree on to his head. In a third, a girl aged two years fell nine feet from a window. She did not recover complete consciousness for three weeks, and a week after regaining her senses the hair began to come out on the left side of the head, and she became quite bald in a week, with the exception of a small tuft at the left occipito-parietal suture; the nails were unaffected. A year and a half later the hair was returning, leaving circular bare patches like a commencing alopecia areata. Rapidly universal cases after worry, fright, and injuries to the head have been recorded by Tyson, Duckworth, Cooper, Todd, Holmes, Collier, and others in this country and abroad. In some, the hair began to fall out in patches; in others, it came out indiscriminately, or even in masses. In a captain, whose ship was struck by lightning, and who sustained scalp wounds, it began the very next day on the beard, and then the scalp and the rest of the body were denuded; two months later, the nails scaled off from the fingers, but not from the toes. In several other of the above cases, some or all of the nails were lost. In one of Tyson's cases, the big toe and thumb nails alone escaped. In a case of Bidon's,* a healthy boy lost all the hair of his head a few hours after a transitory fright, the eyebrows and lashes followed in a few days, and the loss was permanent. In a case of Boissier's, a father saw his child killed, as he thought. The next day, the hair began to fall out of the scalp and face, and alopecia was complete in a week. Re-growth immediately began, but the hair came back quite white and remained so. In a very large proportion of these, loss of hair is permanent, and the course is for the most part rapid. In the following instance, it was more gradual. A woman, aged thirty-five, began to lose her hair during pregnancy, nine months before I saw her, but it was several months before the alopecia was complete on the scalp, with the exception of a few straggling hairs on the back. The eyebrows and lashes were partially lost; some of the nails were deeply furrowed, others were half separated from the matrix, while others again were flattened with

* *Jour. Mal. Cut.*, vol. xi. (1899), p. 372.

slight pitting. The universal cases of this type are really very rare, although, owing to their striking character, a considerable number are recorded in dermatological literature.

In this and in the other forms where a sufficiently large area is affected, the skin is whiter than normal, preternaturally smooth, and soft to the touch when pinched up; it is evidently thinned, and having lost much of its elasticity, pits slightly on pressure. The loss of the eyebrows and lashes produces a striking and characteristic aspect. The downy hair of the body is also often lost.

Class II., Alopecia Localis seu Neuritica, comprises cases of baldness occurring in one or more patches at the site of an injury, or in the course of a recognisable nerve. These are very few in number comparatively, but there are many on record. In a woman with melancholia, aged thirty-four, whom I saw with Dr. Savage at Bethlem Hospital, there were white patches of hair in the course of the left supra-orbital, and one between two or three inches in diameter was almost bare; there was no history of them obtainable. Many cases have been preceded by severe and persistent neuralgia, and even when the hair is restored on the bald patch it not infrequently remains white. In Pontoppidan's case, a girl, aged ten, had some glands removed in the left carotid region, which was followed by ocular paralysis, indicating injury to the sympathetic nerve, while loss of hair in areas on the back of the head took place, and six weeks later the whole back of the head became denuded in the region corresponding to the domain of the great and small occipital nerves, and the posterior branch of the great auricular. Within three months, the hair began to grow again. Joseph excised the second cervical ganglion in the cat and rabbit, and this operation was followed by alopecia patches in the territory of the second cervical, the occipital, and the great auricular nerves; but the results were not uniform, and his experiments, though partially confirmed by Mibelli, are not accepted as conclusive; for Behrend and others have not been able to get the same effects. If my theory, that there is a neuritis in all this class is correct, the experimental discrepancy might be accounted for by the presence or absence of that factor, as it is probable that in the most careful experiments the neuritis would be avoided. In corroboration of the neuritis theory, two cases related

by J. Collier* may be cited. In one, a schoolboy received a blow on the left ear in a fight; it was followed by severe neuralgia, which lasted a fortnight, and then a large bare patch was noticed in the left parietal region; in about a month, the hair grew again, but was quite grey. In the other case, a blow with a cricket ball was followed by a bald patch one inch above the injury; the hair grew again after some time. Similar cases are scattered through the literature of the subject.

It is probable that there are other cases of neurotic origin in which bare patches are formed resembling, and sometimes indistinguishable from, the last class, which I regard as parasitic, but which many dermatologists retaining the old view consider to be neurotic. Of these may especially be mentioned the cases in which leuco- and melanoderma are associated with what in other respects resembles ordinary alopecia areata. In some cases, the leucoderma has preceded, and in other cases followed the alopecia, and although the number of these cases is very small, perhaps one per cent., yet inasmuch as leucoderma is a rather rare disease, the association is more frequent than can be accounted for by "coincidence," and as leucoderma is universally regarded as of neurotic origin, the associated alopecia would then probably be of similar pathogeny. Thibierge states that the alopecia which may occur with leucoderma is of a special type, and is of bad prognosis. I have not been able to verify the statement.

In one of my cases, a girl of seven, the baldness was said to have begun in patches after a fright, but was complete when I saw her, and of nine months' duration. There was symmetrical leucoderma of both hands and forearms, which came on some months after the alopecia. This child has recovered the greater part of her hair.

The difficulty of coming to a conclusion in some cases is shown by the following instance.

A youth of eighteen, of general good health and physique, had a very marked degree of seborrhœa, three patches of alopecia areata, and leuco- and melanoderma, which had followed the alopecia. This case can equally well be regarded according to the bias of the observer as alopecia areata produced by the seborrhœic microbe of Sabouraud, or as a

* *Lancet*, June 11th, 1881.

neurosis which also led to the leucodermia, or as three independent conditions.

Class III. represents what may be called true **Alopecia Areata**, and is the accepted type of the disease, the previous forms having hitherto been mixed up with it. In opposition to the other groups, it might with propriety, in my opinion, be called alopecia parasitica. Inasmuch, however, as its pathology is still a moot point, it is better to adhere to the generally received title of alopecia areata.

It forms probably 90 per cent. or more of all the cases of alopecia with complete denudation of the affected part, and of all



Fig. 84.—Band form of alopecia areata.

forms of skin disease about 2·5 per cent. in England, 1·5 per cent. in Scotland, 3 per cent. in France, ·5 to ·8 per cent. in North and South Germany, and about ·5 per cent. in America. In my private practice, it is nearly 6 per cent., but this probably exaggerates its real frequency.

Symptoms.—The disease usually commences on the scalp, or in males it may be on the whiskers or beard; less frequently, it may affect any part that is normally hairy, such as the eyebrows, axillæ, and pubes, or even the downy parts.

There may be only one or many patches, the multiple patches being formed in irregular succession and arrangement, symmetry

being exceptional. Although there is no unilateral tendency, on the whole, in men, the earlier patches are more often situated posteriorly, just above the line of junction of the parietal and occipital bone, and at a corresponding level at the sides; this corresponds in many instances with the line of close contact of the head covering. The chin is also a not uncommon position, but most frequently in those who are clean shaved. The shape of a patch is primarily round, though it may become irregular by coalescence with neighbouring patches.

When not compound, the patches range from one-half to two inches in size, and while each is generally rapid in its formation, at first, subsequently it may spread very slowly. There is no limit to the area of the compound patches, and by the frequent formation of new ones, the whole scalp and face may be denuded. On the other hand, the disease may be arrested at any point, from a single small patch upwards.

A less frequent form is a broad band of baldness which may extend posteriorly from ear to ear or go all round the head (fig. 84). This band or serpiginous form is much less common than the round patch form, and often extends much more rapidly. In one of my cases, the hair came off in zigzag channels until the whole scalp became denuded. This variety is the *ophiasis* of Celsus, who considered it the more favourable form, but this is only correct when it occurs in children; in adults, in my experience, the prognosis is not so good as in the ordinary form.

Quite recently, Sabouraud has claimed this form as exclusively a disease of childhood, and only seen in adults as a recurrence. This is true only for the majority of cases. I have seen repeated instances in which the first attack was in adult life. Moreover, both in children and adults it is often seen in association with ordinary patches and (!) stumps may also be present. A girl of ten contracted tinea tonsurans with scaly and stumpy patches; a year and a half later her hair came out and she was completely bald in a month. Three years later the hair was completely restored, except a band one inch wide extending posteriorly from ear to ear. Two years after this a bald patch appeared just above the nape with numerous (!) stumps at the border. I cannot therefore acknowledge that there is either any essential difference between the *ophiasis* commencing in

childhood and that of adult life, and there are so many connecting links that I could never satisfy myself that there is a pathogenic difference between band and patch alopecia.

Sabouraud,* however, is inclined to a neurotic theory on account of its symmetry, and because he cannot find his seborrhœic micro-bacillus or other organism, but ordinary seborrhœa never is seen in this position.

The surface of the bald patch is as smooth as a billiard ball, whiter than normal, and whether from the loss of so many hair bulbs, or from atrophy of its own tissue, the scalp is obviously thinner than before, more lax than in health, and sometimes slightly depressed below the healthy skin, and while the tactile sensibility on the patches is inappreciably diminished, except perhaps with an æsthesiometer,† there is much less sensitiveness to irritants, the diseased area often remaining unaffected, while

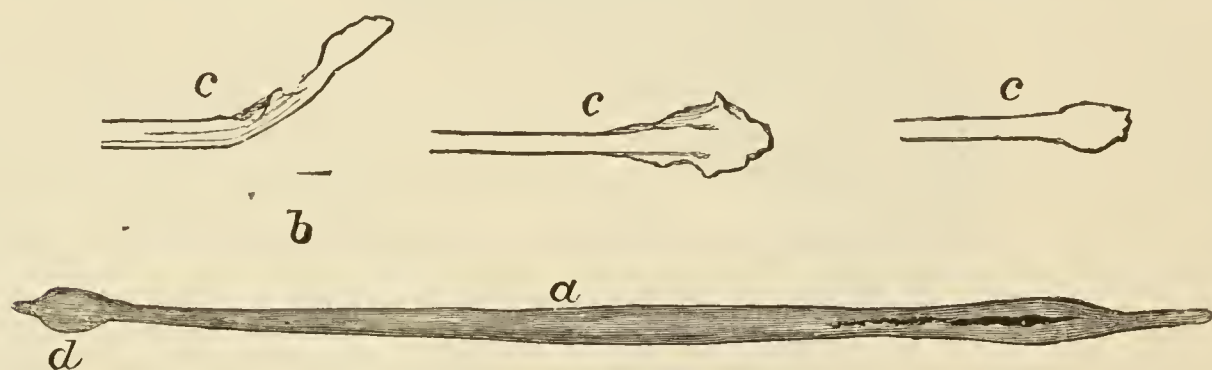


Fig. 85.—Short (!) hairs of alopecia areata.

b, natural size ; *a*, the same hair $\times 50$; *c*, *c*, *c*, atrophied roots, $\times 50$.

the normal skin is inflamed by the remedies applied. On the borders of the patch, as long as it is spreading, there are a few short hairs, as characteristic in their way as those of *tinea tonsurans*, and I have never met with them in the indisputably neurotic cases. They are generally about an eighth of an inch long, sometimes longer, quite straight, thicker at their free end than at the point of insertion, come out almost with a touch, and end in a point, or show a slight thickening at the end of the otherwise atrophied root, and look just like a note of exclamation sign (!), with or without the terminal dot (fig. 85). In the early stage, a few of these hairs may sometimes be seen in

* Sabouraud appears to think he has re-discovered this variety, and says that it is not described by any modern authors. This may be true of French, but is certainly not so of English authors, from E. Wilson downwards. It was figured in my last edition.

† Neumann says it may be anæsthetic.

the middle of the patch, and I once saw a commencing patch uniformly covered with these hair stumps, but they were all gone by the following week. In some cases, they are present in enormous numbers, and constitute what Besnier calls "*pelade à cheveux fragiles*." There is, however, no essential difference between these and the ordinary forms, but they indicate that the case is one of rapid extension. The thickening of the free end is only apparent, and represents the diameter of the normal shaft, which, owing to damaged nutrition, has broken off close to the surface, while the atrophied root is gradually extruded, and soon either falls out or breaks off at its thinnest part; hence their presence is a sign of recent extension, and they are never present in old stationary cases. Another sign of active extension is that the apparently normal hair adjacent to the patch is very loose; a moderate pull will bring out many hairs at a time.

The course of the disease is very variable. While in some cases, the patches seem to form suddenly, whole tufts of hair coming out when it is combed in the morning, without any previous symptoms, or at most slight itching, and then perhaps going on from bad to worse, patch after patch forming and running together until all hair is gone; in others, it proceeds much more slowly, taking weeks or months before the whole head is denuded; or, after going on for some time, the disease may come to an apparent termination, the hair begins to grow over some patches, while fresh ones are forming elsewhere, or fine, downy hair springs up after some time, only to fall out after a brief sojourn. In very favourable cases, the disease stops after one or two patches have appeared. A patch may be perfectly stationary for a long period and then begin to spread and fresh patches appear elsewhere.

When the disease takes a turn for the better, the hair round the patches can no longer be easily pulled out; then the patch gets smaller by the formation of new hair at its periphery, or in very happily circumstanced cases or when the patches are small, new hair springs up uniformly all over the bald area. This new hair is generally very fine and pale, and lanugo-like, even in dark-complexioned people, and is seldom of normal colour at first. In many it is quite white, and thus there may be patches of white mingled with the normal darker hair, producing

a curious piebald appearance. When the whole scalp has been denuded I have seen the whole of the hair return quite white, and after some months gradually resume its normal dark colour.

Eventually, unless the patient is on the wrong side of fifty, when the result is doubtful, the hair becomes more vigorous, and the pigment is restored, and it is occasionally possible to trace its progress. Thus at the distal extremity, or first formed part, both cortex and medulla are colourless; nearer the scalp, the medulla is pigmented, but the cortex white; while nearer still the whole is permeated with pigment particles (fig. 82). Although recovery is generally very slow, months or years being required for it to be complete, the partial cases, in all but the elderly, almost invariably get well, and a large proportion even of the generalised ones eventually get sometimes complete, sometimes incomplete, restoration. Relapses are frequent, either soon or only after a long interval, in about 20 per cent. of the cases in my experience, some of them having been attacked several times. In a lady of thirty-two years, it began when she was seven years old, and she had often been nearly well, *i.e.*, with only a single small patch; but she had never been quite free. This patient was a strong, healthy woman. In the unfavourable cases, the scalp becomes very smooth and shining, and the orifices of the hair follicles are either obliterated, or marked out only by sebaceous secretion, and there is often a white atrophic circle round each orifice.

In those who wear a beard or moustache, the first sign sometimes is not baldness, but a portion turns white and may enlarge, the hair not falling out for some weeks or months afterwards. It is, however, much more frequent in those who are habitually shaved at a barber's, the first sign being a bald patch.

Variations.—Besides the band form already mentioned, there are cases in which one or more pea-sized bald spots appear in various parts of the scalp. They show very little tendency to enlarge, seldom attaining to more than half an inch, and the majority are not more than a quarter of an inch in diameter; their number, however, is very likely to increase, and occasionally they are very numerous. Their aspect is pearly white, and they are often difficult to distinguish from a scar; it is seldom possible to find any diseased hairs at the border, and very difficult to make hair grow upon them. Such a condition may be seen

sometimes as a sequel or complication of ordinary ringworm, but it may also occur without any history of such an antecedent, either sporadically or in groups of cases in schools or families. It must be distinguished from the concave permanently bald cicatrices of alopecia cicatrisata.

Class IV.—Alopecia Seborrhoica Circinata. For some time past I have observed cases in which one or more circular bald patches have been present in association with dense seborrhœic scurfiness of the scalp. The denudation is complete, but the surface is more or less scaly like the rest. At the periphery of the patch may generally be found some short straight hairs, which do not pull out easily, and are longer than and not like the characteristic (!) stumps, although a few of the latter may be occasionally found as well.

There is often only one patch, and seldom more than two or three, and the patches are usually on the vertex, more often behind than in front. This variety is of interest, especially as lately Sabouraud has claimed that all true alopecia areata is the direct result of the seborrhœic bacillus—a view which does not appear to me to be consonant with the clinical facts. The above variety is not very common in my experience, occurs in children even more often than in adults, and is usually very amenable to treatment, whereas Sabouraud's seborrhœic alopecia areata appears to correspond nearly with my Class III. But he says that it never occurs until after puberty; does not attack the borders of the scalp, and that the stumps never have a brush-like termination, but are always bevelled. From all these "nevers" I strongly dissent. Finally, his statement that the seborrhœic micro-bacillus is present in all the cases he has examined, I am quite willing to accept on his authority, but not the deductions he draws from the fact. I only accept this organism as one of the causes of bald patches. With regard to stump-ends, a brush-like termination is not very uncommon, and Blaschko says trichorrhæxis is a very frequent, if not constant, initial sign of alopecia areata. I should, however, say that a bevelled end is the rule.

Etiology.—The disease occurs in both sexes, but is said by some authors to be more common in females; but this is not true—in my experience, out of 506 hospital cases, 275 were males and 231 females. In my private practice the proportion is nearly the same. The range of age is from two to sixty, but only 10 out of the

above cases were under five, and 21 only over forty-five. It is much more common in childhood; 214 of my cases were under fifteen, 214 occurred between fifteen and thirty-five, 57 between thirty-five and forty-five, and 21 after that age. These statistics show that it is not most frequently a disease of middle age, as Sabouraud states.

It has been asserted that it occurs exclusively among dark-haired people. This, however, is certainly not true. I have repeatedly seen it among fair-haired persons of both sexes, but I am inclined to believe that it is more common in dark-haired persons. A man, aged twenty-nine, said that the disease was of fourteen years' duration altogether, though his hair had regrown several times. The mother, who has dark hair, first had it, then the patient, who also has dark hair, and then his younger brother, also with dark hair. The father and sister, who have fair hair, have not had it. This is not a solitary instance of such a preference. It is seen in all stations of life, but not often in the most prosperous classes.

The etiology of the admittedly neurotic group has been sufficiently discussed with the clinical description of each class. There remains, therefore, only that of Class III., or alopecia areata proper. In a very large proportion of cases, the evidence is entirely negative, and satisfactory explanation of its causation cannot even be conjectured from the history. In a small number, there is very strong evidence of its having been communicated from another sufferer from the complaint. In a larger number, it can be shown that contagion is the probable cause. As an instance of direct contagion may be given the case of a lady of fifty, who stated that hers began soon after sleeping for three weeks with a married daughter who was suffering from it, who, in her turn, ascribed it to having slept with a lady who had been quite bald from childhood.

Cases where contagion is probable are dependent on the patients' statements that they have been in more or less close contact with others suffering from it, or that bald patches came on the chin soon after being shaved by a barber, or on the head soon after having their hair cut, especially when the tondeuse, or hair-clipper, has been used. Three of my patients have dated it as occurring soon after wearing a hired wig at amateur theatricals.* In a case

* In March, 1897, a man, æt. thirty-one, came to U.C.H. with alopecia

of Feulard's, it was ascribed to wearing a carnival mask which had previously been worn by a brother who had long suffered from alopecia areata.

In a few instances, I have seen it in more than one member of the same family, such as brother and sister, mother and child, father and child.

Endemic outbreaks of bald spots, usually of very small size, in schools, etc., have been observed several times; one of the best known instances is that of Hillier,* in a parochial school of eleven hundred children of both sexes. The disease was limited to the girls of one block from seven to fourteen years old, forty-three of whom were suddenly found to be affected, while one girl had had it for some time. The patches varied in size from a fourpenny-piece to an inch or more in diameter; on some children, there was but one bald spot, on others two or three; most of the patches were round, but some were irregular. He found in the root-sheaths of two or three hairs a number of spores of a fungus, having all the appearance presented by the fungus of *tinea tonsurans*, and many atrophied hairs.

A still better example, because it was investigated by a skilled observer in the light of recent researches, was recorded by Bowen of Boston U.S.A.† In a school of sixty-nine girls from three to fourteen years old sixty-three were affected more or less. The great majority had very small, almost punctate lesions, but there were numerous cases with large patches of the ordinary type; in no instance could he find any trace of ringworm stumps or scales.

The following series of my own are evidently of the same nature: Eight children in one family while at the seaside had each a few small, perfectly bald spots on their heads. They were quite bare from the first, and never larger than half an inch in diameter. After a time, the governess, æt. twenty-four, observed three pea-sized, oval, bare spots on her own head. She then went to her home, where her doctor told her it was alopecia areata, and not conta-

areata, which had been present for a year and a half in patches. He stated that he had a child who was born with a fair amount of light hair. When five months old it began to lose its hair in patches like pennies, I saw the child when nine months old, and found that, although the hair was very thin at the temples, in the left occipital and the right parietal regions there were no bare spots.

* Hillier's *Handbook of Skin Diseases*, p. 286.

† *Brit. Jour. Derm.*, vol. vi. (1894), p. 80.

gious. She therefore slept with her adult sister, who soon afterwards showed similar spots on her head. The mother of the children when she came to me had a bare, round spot half an inch in diameter, in the occipital region. It had been noticed for three weeks. The hairs round were loose, but there were no short hairs.

In no case were there more than three spots, and they were all small. In one child, there was a history of a red ring on the side of the cheek. Whether this small-patch variety is the same, or a different disease from the ordinary form of alopecia areata, is open to discussion.

Many endemic outbreaks have been recorded from time to time in France by Hardy, Besnier, Leloir, Dubreuilh, Feulard,* etc., in regiments, ascribed to the use of the "tondeuse," or hair-clipper, in a fire brigade in Paris, etc., and the belief in a contagious form of alopecia areata is firmly rooted there. In England, Hutchinson and myself are the chief apostles of the creed, but our disciples are few and often half-hearted. In Germany and America the belief in contagion in one form or another is on the increase. Of course it is not contended that it is readily contagious like ringworm, only that under favourable circumstances it may be communicated from person to person.

In a certain number of cases, a relationship to tinea tonsurans can be demonstrated. Hutchinson believes that in alopecia areata in adults, ringworm in childhood has been an antecedent. Ringworm, however, is so common a disease that its existence at some time prior to the alopecia areata would not prove much. It can, however, be shown that in those countries, like France and England, where tinea tonsurans is most frequent, so also is alopecia areata.

Instances in which adults who have been in contact with ringworm have soon after developed alopecia areata are not rare, while in children such a sequence is comparatively common. Then I have repeatedly seen cases of ordinary ringworm of the

* Feulard stated at the Dermatological Congress of 1892, that in ten months, ending in May, 1892, there was an average of 3·3 out of every 1000 men in the army affected with pelade, and the numbers were greatest in the great centres, and culminated in 10·6 per 1000 in Paris. A patient of mine, a volunteer, with typical alopecia areata, stated that during his month's training, nine men in his company were affected in the same way as himself, and attributed it to the use of a hair-clipper.

head with characteristic bent hairs, which after being treated for some time change into smooth bald spots with the straight (!) hairs of alopecia areata at the border. That smooth bald spots occur *ab initio* which it is acknowledged are of the nature of ringworm, even by ardent advocates of the universal application of the neurotic theory, is an acknowledged fact. In one family, in which several were attacked, there was a strong reason to believe it was originally contracted from a horse with a ringworm. In some of this class of cases, the patches are very small, from a hemp seed to a large pea in size, while in others they are of the ordinary size and aspect of alopecia areata. A lady nurse, aged thirty-five, had tinea tonsurans at the nape just where the hair commences. I got her apparently well with some difficulty, and a month or two later she came with a patch of alopecia areata on the temple. Another lady, about thirty, came with a single patch of alopecia areata, which she had noticed two days. She wanted to know if it was ringworm, as she had recently been in contact, though not very closely, with a child affected with that disease.

It may be said that these are the cases we all recognise as the bald form of tinea tonsurans. Without denying this, I will only remark that they are often absolutely indistinguishable from alopecia areata, possessing the straight (!) hairs of that affection, and not the bent and twisted ones of ordinary tinea tonsurans. Moreover, recognisable ringworm in the adult is infinitely more rare than the class of cases above described.

Excluding cases of the alopecia neurotica group, 90 per cent. of all the rest are in apparently perfect health; and of the other 10 per cent. in my cases, 3 per cent. only had headaches and neuralgia, and in the remainder there were only complaints of trivial importance. I have, however, seen cases in which antecedent influenza may have had an etiological relationship.

The skin eruptions associated with two hundred and fifty of my cases of alopecia areata were single instances of eruptions which could not be regarded as otherwise than accidental. An exception may be made for leuco- and melanoderma. This association has been noted by McCall Anderson, Thibierge, Senator, Feulard, myself, etc., and has already been discussed.

Without denying the possibility of there being cases apparently referable to Class III., but which may be neurotic in origin, they are certainly few in number.

Pathology.—This may be summed up as follows:—There are tropho-neurotic and parasitic forms of baldness mixed up under the title of alopecia areata. No one would dispute that my first two classes are tropho-neuroses. It is also scarcely possible to dispute that there is a parasitic form, but this, except in France, is only just being grudgingly admitted by many dermatologists. But while I believe that this form includes all the ordinary cases of the disease, this is not generally accepted yet; and the tropho-neurotic theory is still largely supported, in spite of the fact that, if this was always a neurosis, and that, too, of a degenerative kind, it would be unparalleled among all other neuroses that it should be—first, a very common disease; secondly, most common in childhood and in the prime of life, and very rare after fifty; thirdly, most common in males; fourthly, the patients in a very large proportion of cases are strong and vigorous in every shape and way, and do not show any other forms of neurosis; moreover the majority of those who do have other neuroses, or give evidence of a possible neurotic exciting cause, have only the most common forms of neurosis which would be found in a large proportion in almost any form of common diseases or ailment. Further, there is never a demonstrable nerve distribution except in the small traumatic group of Class II. In favour of a neurotic origin is the fact that baldness, both diffuse and in patches, may undoubtedly arise from a nerve disturbance, though the number of cases in which this can be proved or even rendered probable is very small, and in only a small minority is there corroborative evidence, such as concomitant migraine, neuralgia, antecedent influenza, worry, anxiety, leucodermia, and occasionally other nerve troubles. Only as regards leucodermia is there any strong probability that there is an etiological connection.

I do not assert that there are no neurotic cases other than those of the first two classes and the leucodermic cases; but that, if there are such cases, they form a very small proportion, and it is probable that they will not show the (!) hairs which characterise the rest of the class which I consider represents true alopecia areata.

There still remains for discussion the important point: Granting that there is a parasite, what is the nature of the organism? Thin, von Sehlen, and Robinson ascribe the disease to a micro-

coccus; Vaillard and Vincent also found a coccus in an epidemic outbreak among soldiers. Unna describes a very small plump bacillus. Sabouraud recently has come to the conclusion that the same bacillus which produces seborrhœic alopecia, produces alopecia areata. The clinical difficulties in the unreserved acceptance of Sabouraud's theory are many and obvious; moreover, he expressly says that alopecia areata due to the seborrhœic bacillus only occurs after puberty. What is to explain the 40 per cent. of cases which occur under fifteen years of age? Very few of them are ophiasis cases. Personally, while admitting that there are cases of bald patches in connection with seborrhœa, from clinical observation they appear to be in only a very moderate proportion, and many of them certainly occur in childhood. The strongest point in his view is that a filtered culture of the seborrhœic bacillus injected into a rabbit produced total loss of hair; but he himself does not now consider this as valid evidence. This opens up possibilities that toxins of more than one kind will produce baldness. There is, however, another relationship which is equally important and requires investigation.

In my original paper, and more briefly here, I have endeavoured to show on clinical grounds that there is a relationship between alopecia areata and tinea tonsurans—a view arrived at independently by Hutchinson. It is worthy of notice that alopecia areata is most common where tinea tonsurans is most rife, and it is also instructive to observe that the neurotic theory is most strongly held in those countries, such as Germany and America, in which both scalp ringworm and alopecia areata are comparatively rare. In childhood, the two forms of disease can be shown to be interchangeable, while in adults we only see bald patches arising either after contact with the ordinary tinea tonsurans, or from cases similar to itself. May it not be, therefore, that alopecia areata in adults corresponds with the generally admitted bald tinea tonsurans of childhood? This would account for the otherwise curious fact that, while ringworm of the head is so common in children, it disappears after puberty; and may this not be because the hair alters in its consistence,* and the microbe is no longer able to penetrate into its substance, but, passing

* That there is nothing in the mere fact of adult age against the invasion of the fungus is shown in the frequency of tinea in the soft beard hairs of man.

down between the root sheaths, separates the hair from its nutritive supply, and so leads to its atrophy and gradual extrusion? Or, again, it may be that the action of the ringworm fungus is not merely mechanical, and that it produces something inimical to the life of the hair or its papilla. That there is also atrophy, either primary or secondary, of the hair bulb and the tissues round, is clinically and microscopically evident to all, in the shrunken hair roots, the thinned scalp, its diminished sensitiveness to irritants, sometimes even to touch, and the deficiency in pigment.

Anatomy.—The anatomy of the affected scalp has been examined by Jamieson, Vincent Harris, myself, Robinson of New York, Giovannini, Unna, and others. Unna* is more in accordance with Harris and Robinson.

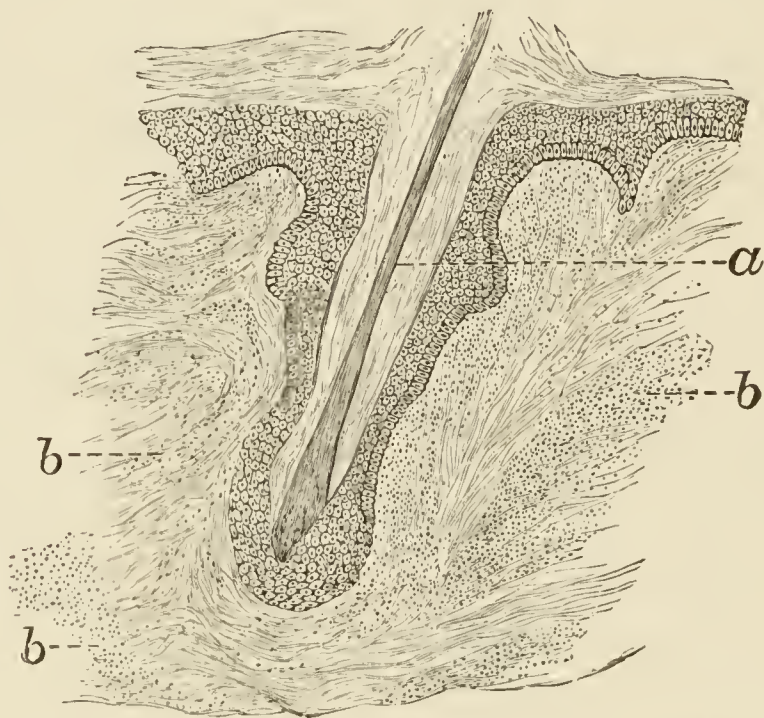


Fig. 86.—Section of scalp in alopecia areata. Obj. $\frac{4}{10}$, ocul. 2 in.
a, lanugo hair in dilated follicle; b, b, b, masses of round cells.

Jamieson removed skin from the living subject in a case of two years' duration, and the results were entirely negative, both for tissue changes in or around the hair follicle, as had been described by Michelson, and as to the presence of a fungus. In Duckworth's case, examined by V. Harris, the hair follicles and sebaceous glands were atrophied, and there was considerable increase of fibrous tissue round the follicle, and infiltration of the outer root sheath with a new round-cell growth; the hair follicles were beset with nuclei, and there was an inflammatory cell infiltration in the middle of the corium, extending mainly along the vessels. No parasite was found. My own observations were made from a patch which had existed five years in a man of forty. There was a scanty lanugo growth present here and there. Microscopically, there was atrophy of all parts of the hair follicles, many of which were considerably dilated, and contained only fragments of hairy substance; in others, the follicle was shrunken, and

* Unna's *Histopathology* gives a critical *résumé* to date, p. 1090.

contained small hairs. The sebaceous glands (unlike Duckworth's case) appeared abnormally large, or at least not atrophied, and broken up into very distinct lobes by fibrous septa. As in his case, there was abundant round-cell infiltration of the outer root sheath, and all round the follicles as far down as the sweat coil, which was unaffected (fig. 86). This cell growth was limited to the neighbourhood of the follicle in the deeper part of the corium, but extended horizontally in the papillary layer for a considerable distance from it. In one dilated follicle, there were round, spore-like bodies; but as the orifice was quite patent, this might have been accidental. These observations, while they indicate the trophic changes undoubtedly present, may be due to pressure atrophy from the presumably inflammatory cell infiltration and increased fibrous tissue, and do not enable a conclusion to be formed as to the nature of the exciting cause. At the American Medical Congress in 1887, Robinson of New York showed sections from alopecia areata which had existed only a week, and found normal epidermis, signs of inflammation in the corium, round-cell collection in the sub-papillary layer, cellular infiltration with round cells, dilated blood vessels, and small arteries containing fibrous coagula.* The lymph channels in the corium were enormously dilated, and contained also a fibrous coagulum. The sebaceous and sweat glands were unaffected. In a six months' case, the changes in the papillary layer were greatest. In a case, which had lasted several years, there was atrophy of all the structures except the vessel walls. He ascribes the sudden falling off of the hair to the thickening of the walls and coagula in the vessels of the affected area. The cause of all this he ascribes to micro-organisms, as described by von Sehlen, but they were not only in the hair follicles, but in the lymph spaces of the corium, and consist of diplococci and cocci in masses, colonies, and lines, and in rows in the lymph spaces.

S. Giovannini† has examined skin from no less than twenty cases in various stages. His observations show extensive perivascular infiltration of leucocytes, especially at the lower part of the follicle and in the circular connective tissue layer, and thence making their way between the cells of the matrix and internal root sheath, and leading to degeneration of those cells, disappearance of pigment, and often of fracture of the hair shaft in the follicle. Destruction of the hair bulb, neck of the follicle, and internal root sheath follows, the hair falls out, and there is more or less atrophy of the whole follicle, and sometimes atresia of it. If a new hair is formed, it undergoes the same sort of regressive changes, and falls out before it is mature. In old-standing cases, the sebaceous glands atrophy; and in rare cases, the sweat glands undergo colloid transformation. According to Giovannini, therefore, the whole process is the result of a deep folliculitis, but he throws no light on the cause of the inflammation. He confirms the observations of Harris and myself for advanced cases, and states that the infiltration of leucocytes precedes the fall of the hair, but this Unna disputes.

Diagnosis.—The diagnosis of the ordinary form of alopecia areata rarely presents any difficulty. The circular patches or

* *New York Med. Record*, September 17th, 1887, p. 402.

† *Ann. de Derm. et de Syph.*, vol. ii. (1891), p. 921, copiously illustrated.

bands of perfectly bald, smooth, white skin, with, at the beginning, a few short, club-shaped hair stumps at the margin, which come out easily, can scarcely be mistaken for *ringworm in its ordinary form*, in which the loss of hair is only comparative, the surface scaly, and the hair stumps all over the affected area bent, broken, and twisted, and extracted with pain and difficulty, or breaking off at the attempt. Moreover, in these stumps, the fungous elements are always easily demonstrable, while in those of alopecia areata they are never to be found in short hairs.

In megalosporon ringworm, the stumps are fewer and the baldness therefore more conspicuous, but there is rarely any difficulty in finding some characteristic spore-laden stumps. Even when the stumps are broken off short level with the skin so as to show only a dark dot, a condition sometimes seen in alopecia areata, the fungus is easily found in the stumps of the former, never in those of the latter.

In my experience, the presence of (!) hairs distinguishes the parasitic class from the indisputably neurotic forms. At the same time, there is no theoretical reason why they should not be present, as they are only atrophied stumps. Moreover, in the first class, the universal distribution, the rapid development, and that not necessarily in patches, the frequent involvement of the nails, and the history of injury or mental shock, are the most noteworthy distinctions. In the second class, the unilateral distribution, the small number of patches, even if there is more than one, the absence of tendency to spread after the first week or two, and the antecedent injury, neuralgia, or other neuritic conditions, are the leading features ; while in alopecia cicatrisata, the smallness of the patches, the deep atrophic depressions compared to the slight atrophy of alopecia areata, the permanence of the baldness, slowly progressive character of the patches, the loosened hairs with swollen root sheaths, and possible involvement of the nails, seldom leave room for doubt.

Bald patches very like those of alopecia areata occasionally occur in secondary syphilis, but are easily distinguished by the presence of other symptoms of syphilis, and rapid recovery under specific treatment.

Bald patches after prolonged exposure of the scalp to the Röntgen rays have also been recorded, but the baldness was only temporary (*vide* Hirsuties).

The seborrhœic class as I have described it is distinguishable by the pronounced seborrhœic scurf, and the fact that the patches themselves are usually somewhat scurfy, not having the billiard-ball smoothness of ordinary alopecia areata.

Prognosis.—If the patient is young and the disease in patches, recovery may be predicted in nearly all cases, in from three months to two years. In persons past forty, the result becomes less and less certain as age advances, though even then, there is recovery in a fair number. When the disease has gone on until the whole scalp is bare, the prognosis depends on the time it has been so, and on the presence of new downy hairs which do not fall out after a short stay. It is bad, when there has been no attempt at restoration after several months or years, if the scalp looks very smooth, the orifices of the hair follicles being scarcely visible, and the skin lax and atrophied; but restoration sometimes takes place even after total alopecia has existed for several years (sixteen, Michelson).

The prognosis is very bad for most of the cases in which the hair has fallen out very rapidly and absolutely all over the body and head in the course of a week or two, but a few recover. It is good for the local or neurotic form, though the hair on the affected area not infrequently remains white.

It is always good for my seborrhœic form. The band form and all patches about the nape make a tardy recovery, as compared with patches higher up.

Treatment.—Internal remedies have very little, if any, effect. Arsenic, nux vomica, iron, the mineral acids, and various nervine tonics, have their advocates, but I have never seen any good that I could trace to their use. No doubt if the patient's health requires a tonic or other treatment, independently of the alopecia areata, it is wise and right to give it. On the strength of the restoration of the hair in a case of myxœdema, in which ʒj of the tincture of jaborandi was given three times a day for some time, I have tried it in several alopecia areata cases, the doses commencing at ℥x three times a day, and gradually increasing as tolerance was established, as at first it is apt to cause headache and even nausea; but I have not had any decisive evidence of its success. I have, however, thought that pilocarpine nitrate one-eighth to one-quarter of a grain at bedtime by the mouth has been of service. The patient should wear a flannel nightdress. As the discomfort of

being in a bath of perspiration every night is so great, it should only be tried in cases of complete alopecia of the scalp.

Where opportunity offers, pilocarpine hypodermically injected into the scalp in the dose of about one-thirtieth of a grain of the hydrochlorate, or just enough to produce local sweating, is worthy of a trial. In a few of my cases, it has appeared to be decidedly beneficial, and Morris has had a very successful case. Thyroid extract has not justified the recommendation it has received in some quarters.

When the bald areas have ceased to extend, but the new hair does not grow or does so very feebly, change to a bracing air, such as the seaside or the mountains, or even into the country from a town, will often determine a more vigorous growth.

Locally, strong stimulant applications offer the best chance, and all means which produce a better blood-flow through the scalp. One of the best is chrysarobin \mathfrak{z} j to \mathfrak{z} j of lard, or \mathfrak{z} ss to \mathfrak{z} j of lanolin and oil, well rubbed in night and morning. This has seemed to be one of the best remedies in my hands; but it has the well-known drawback of sometimes producing erythema, with swelling of the face, even when applied only to the scalp; it should always be restricted to the posterior portion therefore, and the patient should be warned of this possibility, so that he may not be alarmed at what he is apt to think is erysipelas. The staining of the skin and hair and of all linen with which it comes in contact are further drawbacks. This drug, being both a powerful parasiticide as well as a penetrating stimulant, fits either theory. A cleaner and less disagreeable application is turpentine. The *ol. pini sylvestris* is the nicer form, one ounce with *hyd. perchlor.* gr. 2 or 4 dissolved in alcohol, while *ext. capsici* \mathfrak{z} ss, or more, may be added where the turpentine alone exerts too little effect. It deteriorates after being made about a week, probably oxychloride of mercury is formed; at all events, a white precipitate is thrown down, and the fluid is less stimulating. Cantharides is a favourite application with many, either as a lotion (formulæ for which may be seen at the end), or with a view of blistering the part. Blistering the patches is often useful when the disease has ceased to spread, and at the beginning also, at the spreading edge; it should be repeated from time to time as the patient can bear it. Bulkeley prefers the application of strong carbolic acid; to recent and spreading patches it may be applied

freely with wool fastened on a match, and I can bear him out that it acts only as a superficial escharotic; the skin is immediately whitened, and the epidermis peels off in a few days, but no sore or deep destruction ensues. I cannot say, however, that the beneficial results have been very striking, and I now use it only for quite recent small patches, and think it sometimes stops further extension; but if Giovannini's observations are correct, and there is perifollicular inflammation at a very early stage, it becomes a question as to whether we are not going on the wrong tack, and that it would be wiser to use in the early stage, mild parasiticide applications which do not excite inflammation, lest we should unwittingly be adding fuel to the fire. I cannot, however, say that I have ever seen any harm ensue from the stimulating plan. Faradising the scalp is also useful at the late stage, a double-tufted wire brush,* to which both poles are connected, being used as the electrode, and the scalp is brushed until the skin is well reddened. Gaiffe's and Thistleton's small coils are suitable instruments for the patient's own use.

Although shaving the scalp greatly facilitates the application of remedies, I am strongly opposed to it, as it necessitates wearing a wig, and the springs of this by their pressure on the scalp impede the circulation and greatly retard recovery, and sometimes prevent it altogether where the springs actually press. There is also no advantage in keeping the hair short, and it makes it more difficult to conceal the bald patches. There is, however, a great advantage in pulling out the loose hair round the patch, as it much facilitates the application of remedies to check extension of the disease, and the patient can be assured that it will fall out of itself a little later. Repeated shaving round the patch is another means to the same end.

Thin, acting on the parasitic theory, has revived the old practice of rubbing in sulphur ointment, for which he claims uniformly successful results, and has published fifteen consecutive cases so treated with recovery, the ointment to be well rubbed in round, as well as on the patches. Sabouraud also advocates it. I regret to say it has not been very successful in my hands; \mathfrak{zj} each of sulphur, resorcin, and thymol to the \mathfrak{zj} is a formula I often use. As many cases are long-continued, and improvement is at the best only slow, it is well to have alternative remedies. Hebra

* I have had a cheap form of brush made for me by Thistleton.

and Kaposi use the expressed oil of mace ; liq. ammoniæ by itself, sponged in, or in the form of a liniment with equal parts of olive oil, is a good remedy, and Wilson adds four times as much spiritus rosmarini as ammonia. He also advocates equal parts of liniments of camphor, ammonia, chloroform, and aconite. The shampooing necessary to rub in these liniments has its use. Tannin, nuxvomica tincture, pepper, oil of mustard, various mercurial preparations, veratria, a legion of other remedies, have their respective champions, and testify to the obstinate character of many of the cases. The practice of those who believe in the universal application of the neurotic theory differs very little from that of others ; the stimulating remedies are nearly all microbicide also. In all cases, the patient should be enjoined to persevere diligently, however disheartening the slow progress may be.

ALOPECIA CICATRISATA.

Synonyms.—Cicatricial alopecia ; Alopécie cicatricielle (Besnier) ; Pseudo-pelade (Brocq) ; Alopecia circumscripta seu orbicularis (Neumann).

Definition.—An inflammatory disease of the scalp producing destruction of hair follicles, at first in small depressed cicatricial areas, which often coalesce into large irregular areas.

Neumann was the first to describe this condition, but imperfectly, as he only saw an early stage. Brocq (first in 1885) and Besnier have independently described it more clearly and accurately. It is a rare disease, but a good many cases have come under my notice. It first attracts attention as elongated or round lentil- to pea-sized and larger concave (occasionally convex) bare cicatricial spots with diminished sensibility. They increase in number and to some degree in size, especially on the vertex, where they often coalesce, forming irregular elongated areas, into which the healthy hair projects like irregular serrations.* Small tufts of hair are also seen standing out like small oases. They are apparently healthy, but when pulled they come out with very slight traction, and the root sheath is attached and swollen from

* In many cases this is a very striking feature, and at one time, thinking I had discovered a new form of disease, I labelled these cases "alopecia serrata."

the imbibition of fluid. The surface of the part affected is generally quite white, but sometimes pink or a very narrow ring of redness surrounds the most affected hairs, or there may be a slight powdery scaliness where the hair is inserted, but most of the hairs look quite normal until they are pulled out. There is never any suppuration at the hair follicles, unless Quinquaud's disease is a variant of it. The disease unless arrested by treatment goes on for many years, and ultimately large areas of the scalp are permanently denuded of hair, for there is never any restoration on the bare spot, except sometimes at the borders of a patch. There are no (!) stumps, but occasionally one or two stumps may be found buried nearly to the end, and when extracted they are found to have no attachment, have no root sheath, and under the microscope the root-end sometimes has a concavity like the mould of the hair papillæ. The nails are not affected as a rule, but I have seen them slightly pitted, and, as in the following case, profoundly affected.

A gentleman, aged thirty-five, in robust health, and with no history of antecedent worry, syphilis, or other serious illness, had a large number of bare, depressed, pea-sized spots on the scalp, chiefly at the vertex; the hair round them was loose, and came out with the sheaths attached, and there were no (!) hairs. All the nails of the fingers and toes underwent the following changes: they first separated from their bed, then became of a dirty yellow colour, and finally thickened without splitting; the surface remained smooth on the finger and big toe nails, but in those of the smaller toes the free end was thick, yellow, and everted, while the proximal part was thinned, rough, and striated, but not discoloured, a deep furrow separating the thin from the thick part. In a man of forty-five, who had had the disease six months the bald patches were very numerous on the vertex and began as irregular spots. The largest compound area was as large as the palm, but narrower, and with tufts of hair scattered over it. Some of the bald areas were slightly reddened. Pernet stained some of the root sheaths for micro-organisms, but none were found, and this has been the experience of others; nevertheless there can be little doubt, but that it is a schizomycetic disease setting up a mild degree of inflammation which destroys the hair papilla.

Diagnosis.—These cases are sometimes confused with alopecia areata, but the irregular outline of the larger patches, the tufts of

normal-looking hair on the bald areas, the depressed cicatricial surface, the absence of the (!) stumps of alopecia areata, and the fact that the hair is never restored, are distinguishing features. The swollen root sheaths suggest an inflammatory origin. Besnier, however, has met with two employés in the same firm in whom one had alopecia areata of the beard, while the other had pronounced cicatricial alopecia. Also the case of a woman with cicatricial alopecia without folliculitis, and shortly after in a close relation ordinary alopecia areata. Brocq has also seen a case which he at first thought was an alopecia areata, then that it was cicatricial, but the patient said the hair had regrown on some precisely similar patches, but not for several years. Both he and Besnier, therefore, have doubts whether the disease is a fundamentally distinct one from alopecia areata.

The *treatment* I have found most successful is to pull out the loosened hairs and rub either a biniodide of mercury ointment two grains to the ounce, or one of sulphur and resorcin of each gr. xx to the ounce, but it takes a long time to stop the process. Besnier affirms that cases sometimes get well of themselves.

ULERYTHEMA OPHRYOGENES.

Deriv.—*ούλή*, a cicatrix ; *έρύθημα*, redness ; *ὀφρύς*, the eyebrows.

Ulerythema is a term proposed by Unna to designate affections characterised by inflammatory redness followed by scarring (*ούλή*, a cicatrix ; *έρύθημα*, redness). If he had succeeded in establishing it, it would have included lupus erythematosus, the so-called "lupoid syco-sis," and another acneiform affection, but fortunately it has only been retained for the affection described by Taenzer.*

This affection was first described by Taenzer in 1885, from six cases, the first three in one family. It commences in earliest infancy by redness of the skin of the eyebrows, where it persists throughout life ; later it invades the neighbouring parts, principally the face, the scalp, and the nose, rarely the arm. At first it looks like a lichen pilaris developed on a slightly red base, then at some point in severe cases, there arises a marked but very superficial inflammation of the skin, and its effect on the hair follicles is to produce in parts a slow growth of vigorous hairs,

* *Monatsh. f. prakt. Derm.*, 1885, No. 5.

generally in tufts. One then sometimes observes the symptoms of a non-suppurating folliculitis, whilst the intermediate skin becomes atrophic.

The ultimate result of this slow inflammatory process in the only case he was able to observe, consisted in a total alopecia and atrophy of the scalp, analogous to that of a long-standing favus. Taenzer thought that the disease was not very rare, but that it was overlooked because it was only when it invaded the scalp that it produced such marked and characteristic symptoms as to show it was no ordinary malady. Dubreuilh considers it to be a keratosis pilaris, and describes the presence of minute hard papules, pierced by an atrophied hair. It begins on the outer side of the eyebrow, and advances in the course of years to the inner end; an atrophic scar with minute telangiectases is left.

The *treatment* Dubreuilh recommends is cod-liver oil, iron, and arsenic, and good hygiene. *Locally*, resorcin soap and inunction of 5 per cent. salicylic acid with glycerine; but the disease is very rebellious to treatment.

FOLLICULITIS.

Inflammation of the hair follicle—or, as it more frequently really is, perifolliculitis—is very common in some form or other. It varies greatly in degree, being sometimes clinically but little more than congestion, at others so severe as to produce suppurative destruction of the follicle. Some of the milder forms of inflammation have already been discussed under the group of lichens, others under eczema and pityriasis rubra pilaris, ringworm,* and others under acne varioliformis. They are so diverse in their etiology, symptomatology, and pathology, and of many forms we know so little, that satisfactory classification is at present not practicable, though a very praiseworthy attempt has been made by Brocq † in this direction. Here only three forms will be discussed: the common sycosis and the two rare affections, folliculitis decalvans and dermatitis papillaris capillitii. There is, however, as will be shown in dis-

* Leloir's "Conglomerative Pustular Perifolliculitis" has been proved by Sabouraud to be due to a trichophyton.

† Second edition, 1892; *Folliculites et Périfolliculites*, p. 283.

cussing dermatitis papillaris capillitii, strong reason for believing that the three affections are closely related, and own a common origin, viz., the staphylococcus aureus and albus, the different clinical manifestations being probably a matter of locality for the most part. As this is not yet generally admitted—indeed, I am not aware that the theory has been advanced before, except as regards the two last diseases—I have still considered them separately.

SYCOSIS.*

Deriv.—σύνκωσις, fig-like, from σῦκον, a fig.

Synonyms.—Acne mentagra ; Ficosis ; Lichen menti ; Folliculitis Barbæ ; Ulerythema sycosiforme (Unna) *Fr.*, Sycosis non-parasitaire ; *Ger.*, Bartfinne.

Definition.—Chronic primary folliculitis of the hairy parts of the face, especially of the beard, due to microbic infection.

Formerly sycosis was divided into non-parasitic and parasitic sycosis, the latter, or tinea sycosis, representing the inflammation excited by the trichophyton fungus. Modern research has, however, shown that the so-called non-parasitic form is also due to an organism, but belonging to the schizomycetes instead of to the hyphomycetes, and we have therefore schizomycetic and hyphomycetic sycosis, or, as Unna puts it, **coccogenic** and **hyphogenic** sycosis, to which he adds the bacillogenic form of Tommasoli. Only the coccogenic form is considered here, and this form is intended when sycosis is spoken of without qualification. Tinea sycosis is described with the other fungous diseases.

Sycosis is not a common disease, one in three hundred being the proportion according to Hebra, but in my experience one in one hundred and fifty is nearer the mark. The name is conventionally limited to primary folliculitis of the beard, whiskers, or moustache ; but it may also attack the eyebrows, the lashes, or vibrissæ of the nose ; and a precisely similar inflammation may occur in the coarse hairs of the axillæ and pubes of both sexes ; on the scalp, however, folliculitis is generally secondary to an eczematous inflammation, which clears up in the skin between

* Author's Atlas, plate lxxxviii., figs. 2 and 3, represent a mild form affecting the whisker and a similar condition of the eyebrow.

the follicles, leaving them still inflamed, but sometimes an ordinary coccogenic sycosis extends directly from the whiskers, and I have seen it over the whole vertex in a seborrhœically bald man, but not extending beyond the seborrhœic region, and attacking the fine regrowth of the seborrhœa and not the more vigorous side-growth.

Symptoms.—Sycosis varies greatly in extent and severity. Papules, nodules, or pustules may be present, and each is traversed by a hair or hairs in the centre. Beginning commonly in the beard, acneiform, hemispherical papules or nodules, soon developing into pustules, form round the hairs. At first, only few and isolated, they gradually increase in number and aggregation; and while, on the one hand, the disease may be limited to a single patch, in other cases, by the junction of multiple foci and peripheral accretion, wide areas are involved. There is, however, much less tendency to the multiplication of foci in this, than in hyphogenic sycosis, the extension taking place in the main peripherally.

The hairs are at first firmly seated, are pulled out with pain and difficulty, and even in the papular stage, the root sheaths, on removal, are seen to be swollen by serum imbibition quite down to the end. As the suppuration becomes more free, they are loosened and easily removed. In cases of moderate severity, the pus may dry into closely adherent, thin, brown or yellow crusts, each spitted, so to speak, by its central hair; while in severe cases, the pustules are so quickly crowded that they coalesce into infiltrations, which may fungate,* and are covered with purulent crusts. When these are removed, the hairs are left standing in shallow pits produced by the loss of their root sheaths, or when the process goes a little further, the follicle is destroyed, the hair falls out, and cicatrization and permanent loss of hair ensue. If untreated, the process invades fresh follicles, until the whole of the hairy part of the face is affected, but it never travels on to the glabrous skin. In severe cases, it may reach all over in weeks or months; in others of less intensity, the whole extent is not travelled over for a long time, the process sometimes lasting, with remissions and exacerbations, from ten to thirty years. In these chronic cases, there is a general infiltration and redness, partially covered

* It is this condition that first earned for it the name of sycosis, from its resemblance to the inside of a fig. It is more common in the tinea form.

with small white scales, with a varying number of pustules interspersed, according to whether there is a remission in, or renewal of, the activity of the inflammation. There is then always more or less scarring from previous attacks, and occasionally keloid ensues in the cicatrices.

Besides the lesions that have been described, swellings the size of a pea to a finger-nail are often seen here and there. They are soft and fluctuating, and when the hairs in them are removed, give exit to pus by the numerous openings produced by the epilation. The hairs may also come out spontaneously, previously to the nodule breaking down. Even when the disease is apparently cured, relapses are frequent, especially when the beard has been allowed to grow too soon.

Variations.—In old-standing cases, the intensity of the inflammation sometimes subsides, and there is only left a chronic, red patch more or less covered with white scales and an occasional pustule from time to time. At the commencement of the disease also mild cases of this type may be sometimes seen, but usually the pustules are more numerous. As will be described under the pathology, two different organisms may produce similar eruptions of this mild type.

Milton more than thirty years ago applied the term **lupoid sycosis** to a variety of scar-leaving folliculitis, which generally begins at the upper part of the whiskers and slowly travels downwards with a narrow erythematous margin, with marked infiltration, followed by cicatricial atrophy and destruction of the hair follicles. The lesions may be papular, vesicular, or pustular, or when the intensity of the inflammation has subsided, only erythematous and scaly, with more or less infiltration. After a time, the process comes to a standstill on one side, but may start again on the other. Brocq, evidently unaware of Milton's meagre description, has described a similar condition as *sycosis lupoïde*, and Unna as *ulerythema sycosiforme*. Unna lays stress on the primarily vesicular character of the affection, the sharp limitation of the interfollicular erythema from the healthy parts, and the superficiality, chronicity, and rebelliousness of the inflammation, and the final patchy character of the scar formation, as distinguishing characters from ordinary sycosis.

Etiology.—The disease being limited to the beard and whiskers, obviously only adult males are liable to it, but the analogous

folliculitis of other regions may occur in adults of both sexes; but it is never so obstinate as in the face. It is common on the upper lip in those who are subject to nasal catarrh, doubtless from pus contamination. Brooke contends that it is contagious, and frequently conveyed by the shaving brush, especially by those barbers who have to do with the unwashed classes. My own impression is that it is certainly more frequent in those who allow the beard to grow than in those who shave, and I agree with Brooke that it may be communicated by barbers, but more frequently they convey a tinea sycosis, which in mild forms is very common in my opinion, the idea that it is rare having arisen from restricting the term to the more severe kerion forms of it. In most cases, impetigo contagiosa only is conveyed, but if this is not cured soon, the pus cocci get into the follicles and produce sycosis.

Pathology.—The disease, as already stated, is an inflammation in and around the follicles. The way in which it spreads from follicle to follicle suggests the presence of a micro-organism, but Bockhart was the first to demonstrate that pus cocci (*staphylococcus aureus et albus*), by their presence in and round the follicles, could and did excite a sycosis of the characters described; hence the appropriateness of Unna's name, coccogenic, as opposed to hyphogenic (tinea) sycosis. Tommasoli has also obtained a special organism, which he and Unna have called *bacillus sycosiferus foetidus*, in a case which appeared to be ordinary coccogenic sycosis of mild type. Tommasoli proved his point by obtaining typical sycosis, by inoculating pure cultures on his own skin and that of rabbits.

The anatomy has been investigated by Wertheim, who showed that each follicle was converted into a small abscess, and Robinson* of New York examined skin from the living subject, and found that primarily the inflammation was perifollicular, exactly like other vascular connective tissue inflammations. Thence serum and even the other products of inflammation penetrate the follicle, whose cell elements swell and disintegrate. The pus infiltration is greatest at the fundus, decreasing from thence upwards. The papilla is comparatively seldom destroyed. Pus reaches the surface by breaking through the epidermis round the follicle; and when the hair is pulled out the whole

* *New York Med. Jour.*, August and September, 1877.

cavity is seen to be lined with pus cells. The sebaceous glands are affected after the hair follicle, while the sweat glands are only occasionally involved.

Unna* gives a long description of the process too elaborate for quotation. He describes four stages, two superficial and two infiltrating. The first is an impetigo of the neck of the follicle; the second is a nodular perifolliculitis of the follicle-neck, consisting of an inflammatory, firm, painful nodule; the third is that of perifollicular abscess, but affecting at first only the side of the follicle. Up to the fourth stage, restitution is possible, but in this final stage of follicular abscess there is suppuration of the whole follicle, with consequent loss of hair and the production of a scar.

Diagnosis.—A chronic inflammatory disease, limited to the hairy region of the face, and beginning in the follicles, can only be sycosis. The diseases most like it are eczema, tinea sycosis, and tertiary syphilis.

Eczema resembles the slighter and more chronic cases of sycosis, but may be distinguished by the following points. The inflammation is seldom exclusively in the hairy region in eczema throughout the whole course, though it may be so. When it comes first under observation, a history or evidence of inflammation in the neighbourhood is generally obtainable. The inflammation does not begin in the follicles, but in all parts of the cutis, and, at first, is more superficial than sycosis. This may be shown by pulling out a few hairs, when in some of them, the root sheath is only swollen by serum imbibition at its upper part, while in sycosis, it is always swollen to the end. The inflammation also seldom approaches in intensity that of severe sycosis. When an eczema of these parts has lasted some time, the inflammation clears up between the follicles, leaving them still inflamed. The two conditions then become indistinguishable, except that the history may show that this eczematous folliculitis is secondary to a more general inflammation, but the distinction at this stage is of no practical importance, as the local treatment would be the same.

Between sycosis and *tinea sycosis* the points of difference are: the tinea is more acute in its development, and frequently begins with a circinate, circumscribed, scaly patch, but subsequently the suppuration is very free; the affected part is lumpy from the

* *Histopathology*, p. 373.

numerous pustules and nodules; the hairs pull out easily and without pain, and their nutrition is affected early, so that they are brittle, dull, and even bent or twisted; multiple foci are much more common, and are seldom seen in the coccogenic form except in old cases. Such conditions should lead to microscopic examination, when the fungus can be discovered. Severe forms are much rarer than its coccogenic prototype, but slight degrees are more common.

Ulcerating tertiary syphilides may resemble severe sycosis. When the crusts are removed—and diagnosis without this is always liable to error—the ulceration is apparent and generally circinate in outline. The inflammation is not simply follicular, and evidence of past or present specific lesions elsewhere can generally be obtained.

The symptoms considered by Unna to differentiate lupoid sycosis or ulerythema sycosiforme have been given under that form of the disease.

Prognosis.—Sycosis is never dangerous, but often very obstinate and liable to recur. A guarded opinion as to *bonâ-fide* cure in old-standing cases should always be given, but considerable improvement can always be promised.

Treatment.—Internal treatment is advocated by some authors, chiefly tonics, cod-liver oil, the mineral acids, and strychnia; and Tilbury Fox thought highly of Donovan's solution where there was much infiltration. For my own part, I regard sycosis as a local affection, in which local treatment is all that is necessary.

Shaving and epilation are most important preliminary measures, and if not practised, either from the unwillingness of the patient to part with his beard, or other reason, the treatment will be much less effective and more prolonged. Although the patient at first shrinks from the idea of shaving over such a sore surface, in moderate cases, if the hairs be first closely clipped, the crusts softened with pledgets of lint dipped in olive oil before removal, a skilful barber gives very little pain, and after the first time, the patient does not mind it. In severe cases, it is not necessary to shave over the worst part, as the hairs are loosened and can easily be pulled out; but in the moderate cases, after shaving, the hairs on the inflamed part may be allowed to grow for a day or two, and then they should be systematically epilated, clearing

a quarter to half a square inch daily; but the process is undoubtedly painful. Not only should shaving be kept up during the treatment, but continued for at least twelve months after apparent cure, or recurrence is probable. In very acute cases, after the part has been cleaned, soothing applications, such as the glycerine of the subacetate of lead 1 in 10, should be continuously applied on lint covered with oiled silk; 10 to 20 drops of carbolic acid to each ounce may sometimes be added with advantage; or an ointment of iodoform gr. 5 to $\mathfrak{z}\text{j}$; or eucrophen gr. 5 to gr. 10 may be substituted. Afterwards, or in cases of less severity, the applications that suit most cases are 1 or 2 per cent. of oleate of mercury; a weak sulphur ointment, about $\mathfrak{z}\text{j}$ to the $\mathfrak{z}\text{j}$; or the diluted nitrate of mercury ointment: one or other of these is generally successful. Shaving with the Krakenheil Spring soap No. 3, or Calvert's carbolic shaving stick, and leaving the lather on at night, is a useful adjunct.

Whatever treatment is adopted, perseverance, with unremitting care, for a long period, is essential for a complete cure. The more heroic method recommended by Veiel of Cannstadt and other German authors—*e.g.*, Wilkinson's ointment (Hebra)—will rarely be submitted to in this country. Where there is much infiltration, as in very chronic cases, a small area at a time may be painted with liquor potassæ and washed off in half a minute and a zinc ointment applied. This is sometimes very effectual, but in the cases of long standing, the best treatment is to put the patient under an anæsthetic and thoroughly scarify the whole diseased surface, then rub iodoform or one of its substitutes into the cuts, and after the bleeding has stopped dress it with iodo-vaseline or boric acid ointment. Many months of tedious treatment may be saved, and a better result obtained by this method.

Ehrmann's treatment is worth mentioning, on account of its ingenuity. He introduced pyoctanin into the diseased follicles by cataphoresis. The anode is soaked in a 10 per cent. solution of methyl blue, then applied to the diseased surface, the cathode being held in the hand. Twenty milliampères was the strength of the current employed. The blue coloration of the hair follicles is a drawback, but the same method might be used for other medicaments. The most recent treatment is exposure to the Röntgen rays until the diseased hairs fall out; ten minutes'

exposure of about three ampères with a six-inch tube at about six inches from the cathode. Ten or a dozen exposures are generally required.

DERMATITIS PAPILLARIS CAPILLITII.

Synonym.—Acne keloid, or Acné chéloïdique (Bazin); Sycosis nuchæ necrotisans (Ehrmann); Sycosis papillomateux and Sycosis framboesiformis (Hebra); *Ger.*, Nackenkeloid.

This disease is only placed here until its nosological position is better known.

Under this lengthy name Kaposi * described a very rare disease, which he said is not a sycosis framboesiformis,† as Hebra thought it to be, as it does not commence in the follicles, and has nothing to do with syphilis, but is an idiopathic inflammatory process, commencing on the hairy border on the back of the neck, and spreading upwards towards the vertex, to which it was confined in one case. My own observations, however, lead me to believe that Hebra was right in regarding it as a hair folliculitis.

Symptoms.—It begins as pin's-head-sized papules, at first isolated, but soon becoming thickly crowded together, and developing in the occipital region into enormously vascular papillomatous vegetations, two or three centimetres high, and made up of granulation tissue. They are crusted, bleed easily, and exude from between the papillæ a stinking secretion, while here and there, by the formation of intercurrent subcutaneous abscesses, they are partially undermined and destroyed. In the course of years they shrink, changing into a sclerotic connective tissue, and finally there is extensive atrophy of the hair follicles and baldness in some parts, and in others, tufts of hair projecting through the hypertrophied scar tissue (*acne keloid*). It is only in this final stage that cases have hitherto been recorded in this country, by Marrant Baker,‡ Roger Williams,§ Eve,|| and two cases have come under my own observation, as mentioned under

* Kaposi, 2nd ed., p. 485, and his *Atlas of Skin Syphilis*, part. iii., plate lxvi.

† Hebra's *Atlas*, Heft x., Tafel 3, fig. 1.

‡ *Path. Trans.*, vol. xxxiii., p. 367, with coloured plate.

§ Williams's case is in vol. xxxv. (1884), p. 397, with histological plate.

|| *Illus. Med. News*, June 8th, 1889, with coloured plate. Fox and Heitzmann in America have also met with acne keloid.

keloid ; probably this is always the outcome of antecedent pustular lesions. According to the man's statement, my first case was a sequel of boils. In my second case, a tuft of hair pulled from the middle of the tumour where there was sign of inflammation, was bathed in pus.

In 1897 I saw a man, æt. twenty, whose mother said he had had an eruption on the back of the head and neck as long as she could remember. When seen, there was a patch in the occipital region, three and a half inches by two and a half, quite bare and cicatricial in the centre ; at the border for half an inch all round, extending into the hairy margin, was a folliculitis 'scabbed and pustular ; each pustule was from a pin's head to a millet seed in size, with a hair in the centre, and situated on a slightly raised red-inflammatory base. There were a few scattered pustules for an inch or more beyond the patch. There was an indurated scar half an inch by a quarter of an inch in the right parietal region. At the nape, all along the hairy margin, there was an irregular band of disease, due to the same morbid process, but the inflammation was less acute, and there was evidently fibrous keloidal thickening round the hair follicles—in short, a developing "acne keloid." Above the band, but joining it, was a keloidal patch an inch in diameter with small tufts of hair coming out between the lobes of the growth, but there was still some slight crusting. Below the band there was superficial scarring on the neck from destroyed hair follicles.

I have related this case in some detail because it illustrates two points. The occipital patch corresponds closely with the condition described by Quinquaud as "folliculitis decalvans," while the nape patches showed that "acne keloid" does develop from a pustular folliculitis, and although there was no framboesiform condition, that is admittedly not an essential feature. On the other hand, it is an occasional feature in sycosis of the beard ; and indeed, Melle records a case from de Amicis's clinic in which an acne keloid was located in the submaxillary region. He also mentions cases extending to the occiput and vertex ; according to him, also, it may affect any hairy part of the face. Ehrmann* has shown that in the nuchal affection, the staphylococcus aureus and albus are probably the cause of the affection just as they are of cocco-genic sycosis.

* *Archiv f. Derm. u. Syph.*, Bd. xxxii., September, 1895.

Kaposi identifies this disease with Alibert's *pian ruboïde*,* the case figured being that of a previously healthy young man, in whom pustules suddenly appeared on the upper lip and vertex. Others soon followed, itched intensely, and either spontaneously or from scratching, the affection spread rapidly all over the scalp, both lips, the ears, pubes, and genitals. There was profuse and offensive otorrhœa and rhinorrhœa; the scalp was swollen and covered with fungating, frambœsiform vegetations, with sanious fœtid discharge; and the patient died in six months from marasmus and colliquative diarrhœa. Post mortem, the viscera were healthy, but there were large tumours on the sides of the larynx, and also on the palate and nasal fossæ. Alibert considers his case an extreme case of yaws, and although that view is not tenable, it certainly does not, in my opinion, quite accord with Kaposi's description of his disease, which is apparently limited to the hairy scalp, and does not appear to be dangerous to life. An interesting case of this class is one reported by Hervouet† of Nantes, which began on the back of the vertex following a traumatism. In Payne's‡ case there was a frambœsiform patch in the middle of the scalp resembling the above cases in some respects, but it recurred after excision, which throws doubt on its nature.

Treatment.—In the tumour stage, excision is the only plan likely to be successful, and there is not the same tendency to recur as in most keloids. But in the granulomatous folliculitis stage, I have found the best plan is erosion with a curette, the granulation tissue, fibrous thickening, or pustules being thoroughly scraped away, and the surface disinfected with iodoform or strong carbolic acid. Boric acid ointment is a good subsequent dressing. The case of the young man related above was successfully treated in this way. Ehrmann cured his case by electrolysis of the diseased hair follicles, but this would be very tedious treatment. The Röntgen rays would be preferable.

* *Atlas*, 1814, plate xxxv., case described p. 156 and post mortem p. 164. Rayer copies a portion of this plate into his own *Atlas*, under the title of "Sycosis Capillitii."

† *Ann. de Derm. et de Syph.*, vol. iv. (1883), p. 421.

‡ *Brit. Jour. Derm.*, vol. xi. (1899), p. 36

FOLLICULITIS DECALVANS.

Quinquaud* has described a chronic folliculitis of the hairy parts, especially of the scalp, which leads to a cicatricial alopecia. Lailier and his pupil Robert† have independently described the same affection under the title "acné décalvante." Cases of this kind have been hitherto confounded with alopecia areata, Quinquaud says, but this could only be with the cases I have described as "alopecia cicatrisata," and in this there is no pustular or papular folliculitis at the border.

The patches are about the size of a shilling, irregular in outline, and almost smooth and polished, but with some granular points at the periphery, and red points on the white, atrophied, cicatricially depressed surface. At the periphery are folliculitic lesions, pustular, papular, or simply erythematous. Histologically, the changes were chiefly perifollicular, and, besides pus cocci, others in pairs and fours were found which Quinquaud regarded as special. The treatment Quinquaud recommends is to wash the head thoroughly, then for ten days paint tincture of iodine on and round the patches, and apply every morning a lotion of perchloride of mercury gr. 1, biniodide of mercury gr. $\frac{1}{8}$, alcohol ʒj, distilled water ʒj. This is of course to stop the disease from spreading. The hair cannot be restored.

The disease appears to be intermediate in degree of inflammation between alopecia cicatrisata and dermatitis papillaris capillitii, but it is to the latter that I should attach it.

DEPILATING FOLLICULITIS OF THE LIMBS.

Arnozan in 1892 first published two cases of this affection, and Dubreuilh in adding two other cases has confirmed his observations.

In the above cases, it was limited to the legs, knees, and thighs, chiefly the anterior and lower part of the latter, and with an exact symmetry.

The elementary lesion is a red papule from a millet seed to a pea in size, pierced by a hair in the centre and sometimes surmounted

* *Musée, Hôpital St. Louis, Moulage* 1293.

† *Thèse de Paris*, Steinheil, 1889, with photograph.

by a pustule or crust. After several weeks, the papule is slowly absorbed, replaced by a lenticular macule, at first violet red, then brown; the hair falls, and only a punctiform pigmented cicatrix is left.

These papules are aggregated into small plaques, which extend peripherally until they attain to patches several inches in diameter, bounded by an irregular zone of folliculitis in process of evolution. This zone is ill-defined owing to the presence of isolated papules in the healthy skin on the outside, and on the inner side by isolated hairs attacked at a later period than the rest. Wherever the process has extended, the part is deprived of hair and punctiformly scarred and pigmented.

The disease extends very slowly, is attended by very little discomfort, and may last for years. The patients have been middle-aged or elderly men without anything to suggest a cause for the malady. Dubreuilh examined two papules histologically, and found an embryonic infiltration compact and circumscribed, closely investing the hair follicles, and containing numerous giant cells. The follicle is reduced to an epithelial cord, and the neighbouring derma is filled with mast cells, but has scarcely any signs of inflammation. Dubreuilh could not find any microbe in the lesions.

Hitherto its course has not been much influenced by treatment.

Folliculitis necrotica appears to be a very similar condition, affecting the trunk from the nape to the waist. Eddowes* has recorded a well-marked case. It is attended with a great deal of irritation.

TUBERCULOUS FOLLICULITIS.

Hallopeau,† Du Castel, and Feulard have described cases which they consider are due to tubercular toxins. They may be isolated or aggregated into patches, and may be considered as varieties of *acne cachecticorum* and *scrofulosorum*. They are frequently associated with *lichen scrofulosorum*, and almost constantly with other tuberculous manifestations. They may form round tuberculous gummata, and even be the starting-point of

* Shown at the Dermatological Society of Great Britain and Ireland. *Brit. Jour. Derm.*, vol. xi. (1899), p. 168.

† The original references are in *Internat. Cong. of Derm. Trans.*, 1898, p. 413.

a lupus vulgaris. They have been produced by the old tuberculin injections. These forms of folliculitis are generally situated on the trunk and limbs, especially on the lower limbs.

They occur as papulo-pustules from a millet to a hemp seed in size, the reddened base extending beyond the moist apex, and sometimes there is a hæmorrhagic areola (cachectic acne). They may in rare instances be aggregated into indurated patches in which the component elements are fused. They extend by the development of new pustules at the periphery, which form superficial ulcerations, or there may be pemphigoid bullæ at the spreading border. Another mode of extension is a raised border, which extends externally and subsides *pari passu* internally, and this so rapidly, that it extends all over the back of the leg in a few weeks.

Histologically, Darier and Laffite only found the signs of a perifolliculitis, and regarded it, therefore, as a toxic process round the pilo-sebaceous apparatus.

D. DISEASES OF THE NAILS.*

The morbid changes observed in the nail substance are, except in the case of parasitic invasion, when the matrix is only secondarily affected, the direct or indirect result of diseased conditions of the matrix, which is subject to the same pathological conditions as the other tissues, such as inflammation, acute or chronic, and trophic changes generally. The nail substance, as a consequence, may undergo increase in quantity, hyperplasia or hypertrophy, diminution, aplasia or atrophy, and the shape, colour, and texture may be altered.

Symptomatology.—It will be convenient to explain here the various terms which are used in the description of abnormalities of the nails, irrespective of their origin.

* *Literature.*—Author's Atlas, plate xc., thirteen figures. *Sydenham Society's Atlas*, plate xvii. Hutchinson's *Archives*, vol. x., 1899, contains a large number of plates of nail diseases. Shoemaker, "Disease of the Nail": a large number of abstracts and references to interesting cases, *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. viii., 1890. Hutchinson's *Archives*, vol. ii. (1891), p. 237. Also Heller, "Die Krankheiten der Nägel," 1900, an exhaustive monograph on the nails, with numerous references and illustrations. Also Pernet, "Affections of the Nails," *Encyclopædia Medica*, vol. viii., 1901, gives copious bibliography.

Pterygium (πτέρυξ, a wing) means the adherence and growth over the nail of the fold of skin which normally exists in a slight degree where the proximal end of the nail joins the finger. Retraction of this fold and exposure of the nail root occurs sometimes (*Ficus unguium*). It is said that carriers are liable to it.

Onychia (ὄνυξ, the nail) is the term used for inflammation of the matrix, whether idiopathic, traumatic, syphilitic, or otherwise secondary. It is not generally applied to chronic inflammations. Typical onychia maligna is usually single, often associated with ophthalmia tarsi and other signs of struma, and, according to E. v. Meyer, is due to direct tubercular infection on some injury, often very slight. A more chronic and less severe form may be occasionally met with. In a patient of mine, a woman, æt. forty-seven, subject to rheumatism, but otherwise well, suppurative

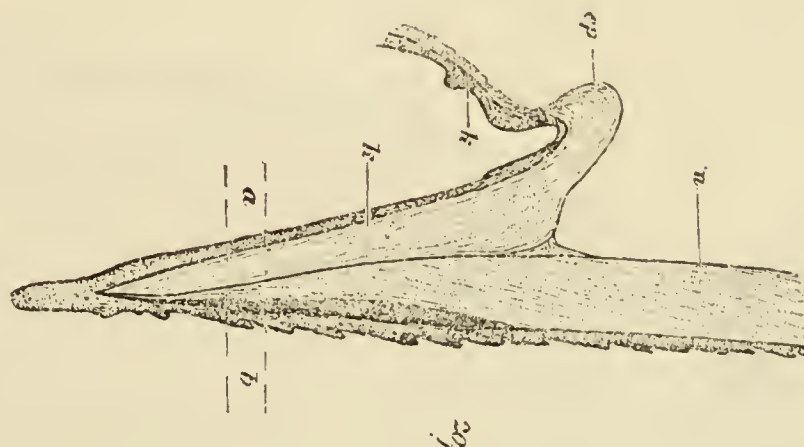


Fig. 87.—Longitudinal section through the nail, and nail fold of a child of three years old (Unna). $\times 20$.

n, nail plate ; *k, k*, granular layer of roof of nail fold ; *ep*, eponychium.

inflammation of the matrix had attacked one finger after another, first of the right hand, and was beginning in the left ring-finger ; after being bad for eight months, the first attacked, that of the right little finger, healed. In another, a lady of thirty-one,* suppuration under the nail fold had attacked different nails for seven months. In one attack, all the nails were involved together. Half-grain doses three times a day of sulphide of calcium controlled it, but the disease recurred in a few days if she left it off. She had good general health, and no cause for the disease was discovered. In the more acute onychia maligna the inflammation is often phlegmonous, and then there is intense redness over the base of the nail, going on to lividity, heat, and throbbing

* Private Notes, L. 237.

pain ; the nail itself is discoloured by the inflammatory effusion beneath it ; suppuration ensues, with sanious discharge ; the nail is lifted from its bed, becoming thickened, opaque, and discoloured, and is often completely thrown off, exposing a sloughy, easily bleeding surface. This may gradually clear up and heal, and an imperfect nail replace the old, or the inflammation may spread to adjacent tissues, and eventually to the lymphatics, and the condition known as **paronychia**, or whitlow, in its worst form be produced. It is one of the most striking symptoms of Morvan's disease.

A patient of mine had recurrent painful whitlows on nearly all her fingers for over forty years, the terminal phalanges were shortened and the ends much thickened. She had no symptoms of syringomyelia nor other disease. Avulsion of the nails and the application of iodoform produced much improvement and the

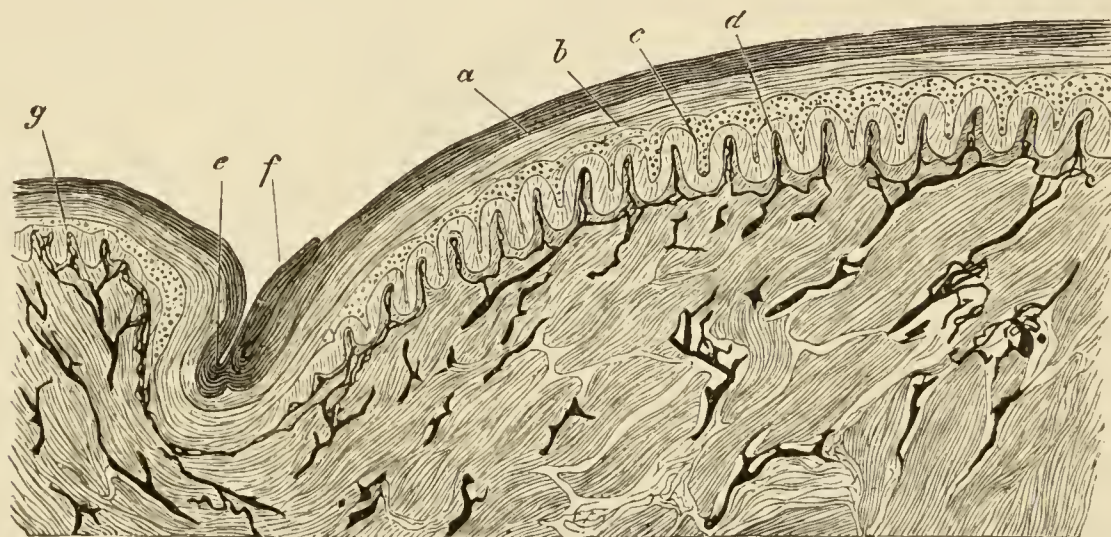


Fig. 88.—Transverse section of a nail, made through the proper bed of the nail (Biesiadecki).

a, nail ; *b*, loose horny layer beneath it ; *c*, mucous layer ; *d*, transversely divided nail ridges, with injected blood vessels ; *e*, nail fold destitute of papillæ ; *f*, the horny layer of the nail fold which has been deposited upon the nail ; *g*, papillæ of the skin of the back of the finger.

cure of some of the lesions. The various forms of paronychia are described in all surgical manuals, and only the variety produced by **ingrowing toe-nail** will be here alluded to. This is produced by a spontaneous growth of the nail into the tissues, or more frequently by pressure or injury. Inflammation ensues at one or other upper angle of the nail, and a tender, granulating, discharging surface is produced, which grows over the nail, and may go on for an indefinite time, unless suitably treated. The inner angle of the big toe is the usual position for this troublesome affection.

Onychauxis (ὄνυξ and αὐξω, to grow) is synonymous with increased growth, or hypertrophy, of the nail, whether simple or, as generally happens, with alteration in texture, colour, and shape. When the growth is chiefly forward, the nail is apt to become bent and twisted, sometimes spirally, like a ram's horn. This condition is termed **onychogryphosis** (ὄνυξ and γρυπός, curved). The nail is much thickened, strongly ridged both transversely and longitudinally, shining, but more or less discoloured, of a yellow or brownish hue. Underneath there is an accumulation of softened, often evil-smelling epithelium. It is generally limited to the toes, especially the great toe, and is rarely seen on the fingers. Nails of this kind may be three inches or more long, and of great thickness. But according to Heller's * observations the nail itself is not much thickened, but there is growth of a horny mass underneath it, which does not contain onychin and stains blue with Gram's method, while true nail cells do not. In the spaces are bodies which stain faintly with carmalum. In slightly marked cases, the nail plate is more thickened than in extreme cases.

Onychomycosis (ὄνυξ and μύκης, a fungus) is the term used when the nail substance is invaded by a fungus. One or more nails may be attacked, and the fungus is that of *tinea favosa* or *trichophytina*. In this case, the matrix is only involved secondarily, by direct extension (see *Hyphomycetic Diseases*).

There can be little doubt that the schizomycetes play a still more important pathogenic rôle than the hyphomycetes, but at present very little is known about the subject.

Shedding the Nails occurs from many causes, chiefly of a neurotic character. They may all be shed, or only those of certain fingers and toes. The great toe is the one most frequently affected. Shedding of the nails also occurs in the universal neurotic form of *alopecia areata*, in syphilis, in enteric fever, in diabetes mellitus; sometimes, without apparent cause; and Falcone† of Naples records a case of severe hysteria in which the nails were shed, preceded by tingling and suppuration of the matrix. Brown-Séquard records a case after section of the sciatic nerve. Shedding

* Heller, *loc. cit.*, p. 269.

† *Deutsch. med. Wochensch.*, October 14th, 1886; quoted in *Lancet*, October 30th, 1886.

of the great toe-nail occurs sometimes in the course of locomotor ataxy, in some cases preceded by subungual ecchymosis.

It occurs in cases of annual "keratolysis," as in Stone's acquired case. Acute inflammation of the skin of the hand is sometimes followed by shedding of the nails, as in pemphigus foliaceus, pityriasis rubra, and recurrent desquamative scarlatiniform erythema, less frequently scarlatina itself. In a case under Colcott Fox,* a washerwoman, æt. fifty-four, all the terminal phalanges of the fingers and toes were inflamed, and the nails were shed without alteration in texture.

In a severe case of impetigo herpetiformis of Jamieson, the nails were shed and replaced by soft yellow pegs, which were painful to remove.†

Montgomery‡ records a case of hereditary and continuous shedding of nails; one or two at a time became dull yellowish-white over the lunula, and then became detached from behind forwards. The process of shedding occupied about three months, while in from three to eight months it was completely restored, and then another one would be attacked. His mother and uncle shed their nails in the same way, and other members of the family had bad nails.

In an anomalous case of recurrent erythematous inflammation in a boy of four, all the hair and nails were shed, and regrowth was very feeble and temporary. The cutaneous inflammation did not affect the scalp, but the ends of the fingers. Shedding occurs in epidermolysis bullosa also, and it may result in permanent destruction of the matrix.

R. Hilbert§ reports a case where for four years in succession, and always in September, the great toe-nails were shed without antecedent symptoms or known cause, except that before the first attack, the patient had had a difficult mountain tour. Dubreuilh|| recorded seven cases; some he thought were tropho-neuroses, others were unclassifiable.

* Colcott Fox, *Brit. Jour. Derm.*, vol. vii. (1895), p. 389. A similar but more painful case was described by Rist, *Annales de Derm. et de Syph.*, vol. ix. (1898), p. 1132.

† Plate xxxviii., *International Atlas*.

‡ Montgomery, *Amer. Jour. Cut. Dis.*, vol. xv. (1897), p. 374.

§ Quoted by Shoemaker, *loc. cit.*

|| Dubreuilh and Frèche, "Décollement des Ongles," *Jour. de Méd. de Bordeaux*, Nos. 26 and 27, June and July, 1901.

The nails have also been shed after prolonged exposure to the Röntgen rays, but more frequently the effects are those of chronic onychitis.

Of all these conditions, a moderate degree of onychauxis or hypertrophy combined with a certain amount of atrophic change, the result of symptomatic inflammation of the matrix, is the most common. The nail becomes more or less thickened, its texture less dense, owing to the loosened adhesion of its cellular elements, the surface loses its lustre, discoloration of a dull yellowish hue ensues, and the surface may be more or less irregular from imperfect growth, and is furrowed and pitted in various ways. These conditions are most commonly the result of eczema, psoriasis, syphilis, or the trichophyton fungus.

Of **atrophic** conditions—furrowing, discoloration, loss of polish, and the pitted or worm-eaten appearance already alluded to, and white spots, are the most common symptoms. The nail, however, may be thinned and softened, or split, brittle, and crumbling. A good example of the latter is seen in some cases of nodulated leprosy, where the original, perhaps thickened, nails may be replaced by a few dirty greenish, horny flakes on the stumpy ends of the fingers. The nails may also be reduced to a rudiment in sclerodactylia. Sometimes these changes are due to local trophic defects of the matrix of the nails themselves, at others to some more distant nerve affection, *e.g.*, in neuritis as in “Glossy Skin” (see that disease). In partial destruction of the nerve supplying the digit, painful ulceration of the matrix may occur.

In gouty persons, one or more of the nails may form a central ridge and split down the centre with slight eversion of the edges of the split.

Onychorrhaxis. Brittleness of the nails is sometimes congenital, sometimes acquired. In a form described by Dubreuilh and Frèche* there is also thinning and longitudinal furrowing; the free border is serrated by longitudinal splitting extending towards the base. It may be associated with anomalies of development or other nervous affections. In pompholyx, the nails in some cases split and chip (Hutchinson).

Unna† describes a peculiar case in which longitudinal tumours.

* *Third Internat. Cong. of Derm., London, 1896*, p. 845.

† *Viertelj. f. Derm. u. Syph.*, vol. ix. (1882), p. 3, with woodcut.

appeared in a circumscribed part of the nail, especially in the median line, over which the nail substance was raised up, became gradually atrophied, split, and the tumour was thus exposed. It was of chronic origin and due to venous stasis, and was sometimes associated with symptoms of deeper venous stasis of the whole finger-end. Treatment was of small avail, but the condition underwent spontaneous improvement and healing. He recognised three stages: first, great longitudinal ridges with decreased cohesion of the nail cells; secondly, reddish, longitudinal swellings; and thirdly, complete separation of the nails into two halves.

Ridged Nails. Longitudinal ridging sometimes occurs, but not with any definite etiology. In one form, the ridges multiply and the disease goes on for years, and finally, the nail is lost. In one of Hutchinson's cases, the nail fold grew forward and half covered the nail. A curious condition, in which all the nails of the fingers, but not the toes, had a central longitudinal ridge,* with a parallel groove on each side, came under my notice in a boy of twelve. The nail had lost its polished surface, being rough and fibrous-looking; the substance was thinned, and had gradually become soft. No cause could be discovered, except that the hands were very cold. Possibly this was a minor degree of the condition above described by Unna.

Separation of the nails from the nail-bed without actual shedding is frequently seen in slight degrees in some inflammations of the finger-tips, and also in cases without traceable cause. An extreme case is reported by Casteret,† in which the whole anterior portion of the nail-blade was separated and raised up into an arched tunnel exposing the whole nail-bed. The patient was a young adult, and no cause could be assigned for it. A slight degree of separation either at the side or end is common in psoriasis, and in a woman, æt. forty-two, with psoriasis, the front half of all the nails was separated.

In a case of Sangster's,‡ separation was followed by suppuration, and this by shedding of the whole nail, in a child, æt. seven. In a case of thickening and striation, vertical and transverse, Hallopeau and Le Damany found three kinds of cocci which by cultivation

* Fig. 8 of Atlas, plate xc.

† *Annales de Derm. et de Syph.*, vol vii. (1896), p. 1419.

‡ Sangster, *Clin. Soc. Trans.*, vol. xiii. (1880), p. 149.

gave short and long bacilli. The nails improved with a one in twenty salicylic acid application.

Very few investigations into schizomycetic invasion of the nail have been made, but in the dirt under the nail all sorts of microbes have been found by Mittmann, including the virulent bacillus pyocyaneus and fluorescens, and the staphylococcus aureus and albus.*

White nails may occur in spots, bands, and in very rare instances all over. *White spots* are common, especially in young people; their mechanical cause is the presence of air between the lamellæ of the affected part, but their origin is unknown. In some cases, they can be shown to be part of trophic changes. W. Sykes † states that in his own person he could produce white specks by scraping, pressing back, and cutting the skin over the lanula, but they are not always of traumatic origin. Bielschowsky ‡ records a case of a man with peripheral neuritis, in whom white spots appeared at the lower part of the finger-nails, rapidly grew, and in three weeks coalesced into a band across each nail a millimetre wide. The toes were not affected. These bands or spots sometimes are a milder expression of trophic defect than the furrows above described. Dr. Longstreth § suffered from relapsing fever, and a separate band bore witness to each relapse. Other cases of serious illness inducing white bands, instead of transverse depressions, are known. Langdon Down's case is especially noteworthy, but according to Heidingsfeld, cutting and pressing back the nail fold is the most common cause of the band form, and he had seen seven cases from this cause.

A case is recorded by Morison || of Baltimore, in which transverse bars of white, alternating with the normal colour, appeared without ascertainable cause on the finger-nails of a young lady, and remained unchanged for months. Giovannini and Unna ¶ both record instances of complete whitening of the nails of the

* *Ann. de Derm. et de Syph.*, vol. vi. (1895), p. 538.

† *Brit. Med. Jour.*, vol. ii. (1897), p. 1260.

‡ Quoted in Supplement, *Brit. Med. Jour.*, January 17th, 1891.

§ Quoted by Shoemaker, *loc. cit.*

|| "Leucopathia Unguium," *Viertelj. f. Derm. u. Syph.*, vol. xv. (1888), p. 3, with plate.

¶ Giovannini, "Canities Unguium"; Unna, "Leuconychia and Leuco-trichia"—both in *International Atlas*, plate xix.

hands only, both in men. Giovannini's case began at the age of twelve, after typhoid fever; the hair was unaffected. Unna's case was probably congenital, and there was a partial condition of ringed hair also present. He calls the three forms leuconychia punctata, striata, and totalis.

Joseph's* second case was that of a young girl. There was sub-ungual keratosis at the borders, and their convexity was directed below and their concavity above. There were also changes in the teeth. Parkes Weber and Krieg's† case was a man, æt. fifty-two, with old valvular disease of the heart; the toe-nails were partially affected, the finger-nails were flat- and one was "spoon"-shaped. In Forcheimer's‡ case "spoon nails" were also present; all the nails were not involved in the leuconychia.

Spoon nails,§ in which the nail is thinned and concave from side to side with the edges everted, and with hollowing to a less degree, sometimes antero-posteriorly, have been observed in some wasting diseases, but also there are a few cases on record where the etiology is obscure. It begins on one finger, and gradually involves the others. I have not heard of it affecting the toes. In a woman of fifty under my care, it came on along with lichen planus of the limbs about four years previously. Brindley James relates a case of a girl of twenty in which there was no apparent cause. Coleman and Taylor record a case in a boy of eight also without apparent cause, but the brother had Raynaud's disease.

Eddowes showed a woman at Hutchinson's museum who had this condition, and said that all her brothers and sisters and all her father's brothers and sisters were affected in a similar way. The toes were slightly affected. In a case of Stephen Mackenzie's, only those nails were affected in which there was end-joint rheumatism. Its association with leuconychia has already been noticed. Julius Heller has also had a case, and he refers to a case recorded by Ball in 1874, in which the frequent immersion of the hands in strong potash appeared to be the cause. In Marrant Baker's case no cause could be assigned. Collan's case was one of keratosis papillomatosus nigricans. It is, therefore, a trophic change which

* *Annales*, vol. x. (1899), p. 164, and *Derm. Zeits.*, vol. v. (1898), p. 651. He had previously published a case in Neisser's stereoscopic Atlas.

† *Brit. Jour. Derm.*, vol. xi. (1899), p. 120.

‡ Quoted *Monatsh. f. Derm.*, vol. xxviii. (1899), January No.

§ Heller suggests "Koilonychia" for this condition.

occurs with various associated conditions of which we do not know the common factor.

Tylosis of the matrix I have once observed in a cowman, æt. twenty-three. The nail was raised from its bed by a homogeneous plate of horny epidermis, which filled up the usual interval between the nail and finger-end. It imparted a dirty yellow colour to the anterior two-thirds of the nail. It appeared to begin at the free end, and had grown inwards like a wedge. The toe-nails were not affected. The man had hyperidrosis of the palms and seborrhœa capitis. Le Fort met with two cases affecting the toe-nails.

Etiology.—The causes of abnormalities of the nail are—

1. Congenital. (*a*) Supernumerary nails growing either on a supernumerary digit, or two on one digit, or growing in some abnormal position, as on the middle of the scapula (Tulpius). It may be added, that supernumerary nails may be acquired, as on the stumps of amputated fingers, or as I have seen in leprosy, where the terminal phalanx had been lost. (*b*) Congenital onychauxis, when the digit on which it grows is abnormally large, *e.g.*, a patient of mine had congenital absence of the two middle fingers of the hand; the thumb and first finger were of enormous size, and the nails corresponded. In a case recorded by Keyes* in a man, æt. forty-eight, the nail bed and consequently the nail itself extended beyond its usual limits laterally round the fingers and toes and forward over the extremity of each digit. The nails themselves were normal in appearance and consistence. He called it megalonychosis. Ramsay Smith's† case of a new-born infant showed a slight transitory condition of a similar character.

A more common cause is ichthyosis (see that disease). An interesting case of onychauxis, with onychogryphosis, is recorded by Sympton‡ of Lincoln, in which all the nails of the fingers and toes projected upwards from the matrix like horny pegs. Nicolle and Halipré§ met with a somewhat similar condition in thirty-six members of a family in six generations, but the nails were furrowed and friable and showed lamellar separation.

* *N.Y. Medical Record*, April 23rd, 1898.

† *Jour. Anat. and Phys.*, vol. xxvi., 1892.

‡ *Lancet*, April 14th, 1888.

§ *Annales de Derm. et de Syph.*, vol. vi. (1895), p. 804, illustrated.

There were also atrophic conditions of the hair. In one of the cases there was chronic periungual ulceration with frightfully offensive discharge. (c) Congenital absence or atrophy is rare, but a few cases are on record.* A case with congenital thinning of the nails is depicted in my Atlas in the nail plate. Jacob † had a case with rudimentary nails in a boy of fourteen.

2. Acquired onychauxis may occur from (a) unrestrained growth, of which onychogryphosis is an example, and is seen chiefly in bedridden and elderly people, or others who cannot or will not give their nails the requisite attention; (b) from elephantiasis Arabum and other causes of obstructed circulation, *e.g.*, lateral pressure of tight boots. (c) Inflammation of the matrix, acute or chronic, whether idiopathic from injury, mechanical or toxic, parasitic or symptomatic.

In a woman, *æt.* forty-eight, after severe seborrhœic eczema capitis et palmæ, all the nails increased in thickness until they were at least half an inch thick and an inch and a half long, yellow and opaque, and very dense. After prolonged treatment the inflammation subsided, and as the hypertrophied nail grew out it was replaced by a nearly normal nail. Unna has also noted nail changes with seborrhœic eczema, but Audry thinks the conjunction is extraordinarily rare.

Acute idiopathic inflammations have already been treated of under Onychia. The nails are often accidentally involved in acute inflammations, such as erythema iris, pemphigus, yaws (Nichols), small-pox, the inflammation taking place beneath the nail and loosening its attachments more or less; spots of xanthoma also sometimes occur in this position; and warts may grow beneath the nail in a flattened form.

The chronic inflammations are generally the result of eczema, psoriasis, pityriasis rubra, lichen ruber, and in all these, there is more or less discoloration and thickening as a rule, often combined with pitting; but when they take an acute form, some thinning may be produced, as often happens in pityriasis rubra. The most marked instance of thinning and softening is that which occurs in pemphigus foliaceus, a disease which is chronic in duration, but acute in its manifestations. Other causes of

* Petersen and Tarnowsky record cases reported *loc. cit.*, p. 69. See also *Méd. Moderne*, September 22nd, 1896, by M. Jacob.

† *Malad. Cutan.*, vol. ix. (1897), p. 55.

atrophy are neurotic conditions, *e.g.*, neuritis, already alluded to, syphilis, and leprosy. Besides the vegetable parasites of favus and ringworm, animal parasites may also affect the nail, as in the worst or Norwegian form of itch, never seen in this country; the chigoe or *pulex penetrans*, of the West Indies; and in the case of some other tropical insects.

The descriptions of these symptomatic affections of the nails are given under the various diseases which give rise to them. They are rarely congenital, but may be apparently idiopathic and localised in one or affect several nails, or it may be a part of the general malnutrition, and sometimes an early sign of nervous exhaustion. It is seldom possible from merely inspecting the nails to infer the cause. The diagnosis has to be made from the presence of eruptions elsewhere, or from other collateral circumstances.

The nails also undergo more or less change in connection with more general affections. Thus in "clubbed fingers" from obstruction to the circulation, as in many chronic cardiac and lung affections, the nails become rounded as well as of a bluish tinge. In hemiplegia, growth is arrested as a rule, but there may be thickening and broadening (Esbach).

Eichorst records a case of pernicious anæmia in which the nails were thickened, fissured, and crumbled at their free ends.

In acromegaly there is marked striation, but not always increased growth. In aneurisms there is sometimes increased growth of the nails (Brocq), while in a fractured limb it is said that the nails cease to grow until bony union has occurred. Zeissler, however, suggests that the cessation of growth is due to interference with the circulation from the pressure of the bandages and splints.

In keratosis nigricans, longitudinal striæ and pitting sometimes occur, and spoon nails and white bands have been noted.

T. Acland relates a case of clubbing of the fingers, with separation of the anterior portion of all the nails from the matrix, which he thought was due to Raynaud's disease, but without any strong reason for the supposition. Of course in undoubted Raynaud's disease damage to the nails would naturally result. I have seen separation from the matrix even down to the lunula several times without any suspicion of Raynaud's disease.

Reedy nails, in which the natural longitudinal striæ become

very marked, apparently from wasting of the intermediate portion, are regarded by many as a sign of gout;* but they are also very common in old persons who show no other sign of gout, and are then only one of many other senile atrophic changes.

Transverse furrows show that the nails also take their share in severe illness—*e.g.*, in fevers, choleraic diarrhœa, pneumonia, etc., there is deficient growth, and after recovery, a furrow remains as a memento until it has grown to the end of the finger. The thumb is most affected and the index finger is next in degree. In relapses of typhoid and similar conditions, more than one furrow may be present, being the record as well as the consequence of the illness. Wilks relates an interesting case in which two furrows recorded sea-sickness on August 28th and October 8th respectively.

White bands may take the place of furrows, and in a case of Hutchinson's, a band of hæmorrhage marked one attack of illness and a furrow the next.

Diagnosis.—The diagnosis of the origin of the nail change can seldom be made from the naked eye appearances of the nails themselves. If due to a constitutional condition, such as gout, syphilis, or leprosy, it is by the evidence of these diseases elsewhere that the cause of the disease of the nails is inferred. The same is true for nail disease as a part of other cutaneous inflammations, eczema, psoriasis, tinea tonsurans, etc. It is very rare for the nail affections to be the sole manifestations of such diseases, and when they are so, the diagnosis is little more than guess-work, unless there is a history of previous cutaneous disease. Hutchinson, however, considers that the separation of the nail from its bed either at the side or end is characteristic of psoriasis. Where the possibility of a fungous origin is present, microscopical examination of nail scrapings (after prolonged soaking in liquor potassæ B.P., or a 40 per cent. solution may be used to get more rapid results), is essential, but it is not always easy to detect the spores and mycelium in nails only slightly affected.

Treatment.—Only the treatment of those nail affections which are not alluded to elsewhere is described here.

In severe *onychia*, the tension may be relieved by incisions and

* Laycock first observed the connection, and Duckworth insists strongly on it.

removal of the nail, and the surface cleaned up by iodoform or iodol and wet boric lint under oiled silk. Thorough local disinfection, in short, is essential. Internally, the treatment must be a supporting one—quinine in full doses, sulphide of calcium half a grain three times a day, a generous dietary, and a bracing climate.

Onychogryphosis only requires that the superfluous part of the nail be removed, after softening by soaking in hot water. Hans Hebra treated a case successfully by insinuating a flat platinum knife of a Paquelin's cautery under the nail until he had burned away all the abnormal accumulation, for which eighteen sittings were required; the nail grew up healthily and remained well.

In *in-growing toe-nail*, the nail should be softened, scraped thin in the centre, the unhealthy granulations destroyed with acid nitrate of mercury, the sharp edge of the nail removed, and the raw surface treated with wet lint under oiled silk, applied with pressure, a part being pushed between the nail and the skin. In some cases, avulsion of the nail is required, and in all cases, properly made boots should be used, or the evil will recur. Scott-Battam's treatment is a good one. "First wash and dry the parts, and then thoroughly rub the granulations with solid nitrate of silver. Since the introduction of cocaine this proceeding can be rendered practically painless. Next, cut small pieces of fine Turkey sponge, and press them well down between the nail and the granulations, inserting a small piece beneath the inner free edge of the nail. Pressing this sponge pad downward and inward, fix it in place by winding a long, narrow strip of plaster round and round the toe, commencing from the outer side, the aim being to compress the granulations, and draw them as far as possible from the nail. A soft, easy shoe should now be worn, and patients can pursue their ordinary avocations without risk. Some aching pain often follows, but this is soon succeeded by a considerable feeling of relief.

"The dressing should be removed and the process repeated in two days' time. A sulcus will then have formed between the flesh and the nail, and on removing the crust formed by the nitrate of silver, a healthy ulcer will be found to have replaced the exuberant granulations.

"On the fourth or fifth day, after well soaking the toe, apply cocaine, and endeavour to insert a small piece of sponge beneath the edge of the nail, which is now more fully exposed, or a piece

can be removed with fine scissors. A mixture of iodoform and alum is now dusted in, and the sponge compress applied as before. In a week or ten days' time, the process is repeated, especially if the ulcer is not healed. After a similar interval, the raw, tender surface will be found to be hard and painless. It is well to continue treatment a little longer, and the dressing can be worn for two or three weeks without discomfort."

In cases of *chronic onychauxis*, where the cause is not ascertainable, the same treatment as for chronic psoriasis of the matrix is generally successful, together with the administration of arsenic, or the remedies suitable for any departure from health which can be detected. One of the most generally useful for chronic onychitis is a salicylic ointment \mathfrak{zss} or \mathfrak{zj} to \mathfrak{zj} of lanolin \bar{c} oleo, spread on strips of linen, and bound closely on night and day, pushing the ointment well underneath the posterior nail fold. When the skin begins to peel, the ointment may be intermitted for a few days. Shoemaker strongly recommends oleate of tin gr. 20 to \mathfrak{zj} to \mathfrak{zj} of lard for cases of this kind. The nail is wrapped up in it as just described. A little carmine may be added to colour it. T. H. Irquhart also speaks well of it from experience on his own person.

Sabouraud recommends constant soaking in a solution of iodine 1 in 1000 dissolved by the aid of iodide of potassium. A one in twenty solution of salicylic acid in spirit is also useful. All these remedies act by their microbicide action, for, as has been pointed out, in a large number of nail affections, primary or secondary microbic invasion occurs. Whichever application is selected, daily scraping the affected nail with a piece of glass increases the penetration and therefore the efficiency of the applications.

CLASS X.

HYPHOMYCETIC PARASITES.

THE diseases included in this class are due to the various members of the hyphomycetes or fungus family. They are :—

I. Favus : due to achorion Schönleinii.

II. Common ringworm : due to various species of tinea trichophytina.

III. Tokelau ringworm : due to tinea imbricata.

IV. Tinea versicolor : due to microsporon furfur.

V. Erythrasma : due to microsporon minutissimum. Some think this is a micrococcus, and that it belongs therefore to the schizomycetes.

VI. Pinta : disease of Mexico ; fungus unnamed.

VII. Mycetoma : due to chionyphe Carterii (?), one of the actinomyces ; or to the streptothrix or discomyces maduræ of Vincent.

VIII. Actinomycosis : due to actinomyces.

IX. Blastomycosis ; due to blastomyces, or yeast plant.

Only the first two diseases affect the hair follicles as well as the rest of the skin.

Mycetoma, actinomycosis, and blastomycosis are not limited to the skin, but affect other tissues, and there is reason to believe that mycetoma is really a form of actinomycosis.

IV., V., and VI. affect only the surface layers, and produce discoloration only.

In order to find the fungus, if merely for diagnosis, it is sufficient to wash the hairs in æther to remove the grease, and then soak them for a few minutes in liquor potassæ B.P., that is, a six per cent. solution of caustic potash. When details of the arrangement and character of the fungus are desired, prolonged soaking in the potash solution is often necessary, or staining methods may be employed (see Appendix), especially if permanent specimens are

required ; but for ordinary clinical diagnosis, the potash solution is sufficient. The following favus and ringworm original illustrations are all made from fresh specimens after soaking in the above potash solution. The fungus will resist the action of the potash for several days, although the scales or hairs which it permeated are dissolved.

When a more complete examination still is required, culture experiments on suitable media, such as the potato, beer maltose, gelatine and agar agar, etc., are necessary. Unna insists on the value of peptone lævulose as a uniform cultivating medium. This takes the matter beyond clinical medicine and the scope of this work, and for this Sabouraud's, and Fox and Blaxall's researches should be studied. Leslie Roberts's investigations in another direction are also deserving of attention.

FAVUS.*

(Lat. for honeycomb.)

Synonyms.—Honeycomb ringworm ; *Tinea favosa* ; *Tinea vera* ; *Tinea lupinosa* ; *Porrigo lupinosa* ; *Porrigo favosa* ; *Fr.*, *Teigne faveuse* ; *Ger.*, *Erbgrind*.

Definition.—A vegetable parasitic and contagious affection of the scalp and general body surface, characterised by sulphur yellow, cup-shaped crusts embedded in the epidermis, and in hairy parts pierced by a hair.

This disease is extremely rare in England (1 in 2000 in my practice), but is common in Scotland (31 in 2000, McCall Anderson), while in France† and Poland it is almost as common as *tinea tonsurans* is in this country. Its favourite seat is the scalp, but absolutely no part of the body surface is exempt from its attack, and it may even affect mucous membranes, such as the glans penis, and in one instance, the mucous membrane of the stomach. It differs in aspect somewhat according to whether it attacks hairy or non-hairy parts of the body.

* Author's Atlas, plate xci., figs. 1 and 2, as it affects the scalp and glabrous skin.

† Feulard stated in 1892 that in France about one thousand conscripts, chiefly from the country districts, were annually rejected on account of favus, but that the number was gradually diminishing.

Symptoms.—It appears first on the scalp as a very small, sulphur-yellow disc, called a scutulum, embedded in the epidermis, and pierced by a hair. If, when it has attained to the size of a hemp seed, it is dug out and removed with its attached hair, the under surface is found to be smooth, convex, moist, and slightly greasy to the touch, while the upper surface is slightly concave, and mixed with the whitish epidermic scales, which also remain attached to the border like a collar. There is a depression left in the rete from which it has been dug out, but this is only due to compression of the cells, which soon swell and fill it out when the pressure has been removed, unless the crust has attained to some size and has been long there, when there may be serous exudation or even bleeding at the time of removal of the crust.

As the small disc enlarges, it projects at the periphery more than at the centre, and thus a cup-shaped depression is produced; still growing larger, it may reach to the size of a sixpence. These large crusts are relatively flatter and furrowed by concentric rings or variously fissured, or they may grow vertically more than peripherally, and thus form elevated, irregular, craggy masses, with a white centre, but the typical sulphur yellow shows at the periphery, unless blood-stained from scratching. After having attained its full development, varying much in extent and duration, but generally taking several months, it becomes paler and of a dirty yellowish white. The margin is elevated through the epidermic covering, and the whole shells off, either spontaneously or from some trifling friction, and the skin beneath, from the long-continued pressure, is left depressed, hairless, thin, white, and glistening; in short, an atrophic scar results.

The hair appears dry, lustreless, and brittle, and sometimes splits longitudinally, getting separated more or less from its root attachments, so that it falls out, or is easily drawn out with portions of the root sheath attached; and the papillæ being often atrophied from pressure, no new hairs are regenerated, and the follicle becomes obliterated: Itching and a sense of fulness are the only symptoms complained of, but there is a peculiar, musty, straw-like or mousy odour, when the disease is at all extensive.

Sabouraud says that favus always leaves a fringe of hair on the forehead unaffected. This may be true as a rule, but I have seen this fringe destroyed by the fungus in one case.

Variations.—Such is the course and development of a single

scutulum (*F. lupinosa*), but in neglected cases, many may coalesce into an irregular mass, with a curvilinear border, indicating the component cups of which it is made up, and according to the shapes and aggregation, names were given in former days, but have now deservedly dropped into disuse. In such a case, all stages may be presented at the same time. On one part of the scalp, will be these masses, at another, isolated typical favus cups, or again, white, atrophic scars, with the skin thin, shining, and stretched over the bones, and at intervals, thin tufts of hair, whose follicles have escaped the general destruction. In the favus masses themselves, the hair is dull, dry, and dusty-looking, and easily removable, unless there remain a few unaffected, and therefore healthy hairs. Complications may arise, of which the most common is pediculosis, with its usual concomitants, eczema, impetigo contagiosa, and enlargement or even suppuration of cervical glands, etc.

Simon describes superficial erosion of the scalp from pressure of the favus masses, and others have described necrosis of the skull and favus ulcer; but since neither Hebra nor Kaposi has met with them, such conditions must be extremely rare, and it is probable that the ulcers are really only the pressure-pitting already described.

Favus is an essentially chronic disease, beginning in childhood, and lasting for many years; one of my cases, a German boy, æt. fifteen, had had it since he was two years old, and Kaposi speaks of it lasting until the patient was forty years old or more—in fact, as long as there were any hair follicles remaining to be attacked; in other cases, it spontaneously stops, leaving one or more bald patches.

In a case at the Hôpital St. Louis,* it had existed untreated in a man of forty-two from the age of thirteen years all over the scalp. Only in the last six months had the lower limbs been attacked, and in a month from the onset spread nearly all over them. He had not transmitted the disease to his wife, though he had been married five years.

On the non-hairy parts, while the scutula present exactly the same characters, variety, and development, there is often an additional feature, somewhat resembling *tinea circinata*, viz., a

* *Brit. Jour. Derm.*, vol. ii. (1890), p. 149. Letter by L. Wickham.

round, red, scaly patch, which develops into a circle with a paler, scaly centre and a red, elevated margin, smooth, papular, or vesicular. On the surface of the skin sometimes, several concentric circles form round a central favus cup, which has developed on the initial disc, or again, several circles coalesce and form a gyrate pattern round the crust or crusts, which may also be present on the margin; when there are no crusts, the circles may disappear spontaneously, after growing to a varying degree. Favus of the free surface has generally, but not always, originated from the scalp. As a rule, when once it has commenced, it develops more rapidly than on the scalp, and the lanugo follicles being more superficial, there is a far greater chance of its spontaneous disappearance, but sometimes it persists for years (twenty years, Michel), and in long-standing cases, produces atrophic scarring, as on the scalp, though there is here also a better chance of the scar being eventually obliterated. When first inoculated, circles of herpetiform vesicles often form, the characteristic cups not appearing till a later period.

When neglected, it may extend over nearly the whole of the body and limbs, as in Roddick's case,* and sometimes time and the patient's idiosyncrasy modify the appearances. In a case shown by Hutchinson at the Dermatological Society, a boy of fourteen, "the whole of the scalp hair had been destroyed, and the scalp reduced to the condition of a scar. The face, part of the scalp, and the fingers were covered with thick horn-like crusts. The nails were thickened and broken up. On many parts of the body and limbs there were crusts and conspicuous scars. The peculiarity was that nowhere was there any crust in the least resembling favus, nor was there any approach to the peculiar odour of that malady, but the fungus of favus had been found both in the crusts and in the scrapings of the nails, but only after very careful search; moreover, two cases of favus arose in the ward while he was in the Plymouth Hospital. The boy's lips were excoriated and the mouth generally inflamed. His circulation was feeble and his hands and feet dusky."

In a unique case of universal favus, shown by Kaposi and Kundrat† to the Society of Physicians of Vienna in October,

* *Montreal General Hospital Reports*, vol. i., plate viii.

† French résumé of the case, *Annales de Derm. et de Syph.*, vol. for 1895, p. 104.

1884, and the morbid specimens subsequently on November 28th, the patient died from gastro-intestinal irritation with uncontrollable diarrhœa, and at the post-mortem, erosions and diphtheritic swellings were found in the mucous membrane of the stomach, and the intestines contained foul, putrescent masses and much mucus. These swellings in the stomach were proved to be due to the *favus* fungus; and there was a little fungus found in the intestine, but the great bulk had undergone putrefaction.

Dubreuilh recognises three clinical varieties :—

1. A pityriasic, or scaly variety, easily confounded with psoriasis of the scalp.

2. An impetiginous, or pustular variety, in which the *favus* lesions are covered with crusts like *impetigo contagiosa*, or some pustular eczemas, a variety previously described by Aubert.

3. An alopecial variety very difficult to distinguish. In this variety there are serpiginous plaques smooth in the centre, and surrounded by a slight zone of folliculitis. The hairs in this zone pull out easily with a thick soft transparent sheath, and they spring from a red, very slightly raised acuminate projection with a small scale or greyish-yellow crust upon it. It is, therefore, an entirely follicular *favus*, resembling *lupus erythematosus* of the scalp, and still more folliculitis decalvans; indeed, Dubreuilh is inclined to regard the latter affection as really follicular *favus*. The chief diagnostic points are: The long duration of the affection—often months or years; the alopecia being cicatricial and smooth; and finally, the minute yellow crust at the base of the hair, which is absent in folliculitis decalvans. The hairs are also dry and dull, and they pull out very easily. In dark-haired people, the difference in the colour of the hair is very noticeable.

Favus of the nail is extremely rare, and is thus described by Kaposi: "One or more nails may be affected in one of two ways: in one a scutulum is formed in the deep cells of the nail substance, as well as the structure of the nails permits, showing through the smooth layer of the nail over it, as a sharply defined, pale sulphur-yellow mass; it occupies only a small part of the nail, either at the side, from the fold to the centre, from before backwards, or near the lunula. In the other variety, it is indistinguishable, except by the microscope, from any other form of onychitis; the nail is dry, lustreless, discoloured, and opaque,

furrowed, fissured, split into laminae, and raised up from its bed. When scrapings are placed under the microscope, mycelium and spores of the same characters and arrangement as in the root sheath of hair are to be found. As it is almost invariably derived from inoculation from scratching the scalp, evidence of the existence of the disease either in the present or past can always be found, and will assist in the diagnosis."

In extreme cases further changes occur; thus in Morris's case* no trace of true horny substance remained, being replaced by an irregular, lumpy, dirty yellowish crust. Fabry† found the changes limited to the epithelial portion, the breeding-place being between the corium, papillae, and the epithelial pegs, and thence the fungus advanced into the upper layers of the uncornified epidermis, but not into the horny layers.

Etiology.—Direct contagion from person to person is the usual mode of origin, but it may also be derived from animals, rabbits, ferrets, fowls, dogs, cats, and mice, which are all liable to it, and therefore possible sources of contagion, cats being the most common source of it. It has occurred under poultices without any ascertainable source of infection, the spores doubtless having been derived from the air, and found a favourable nidus in the warmth and moisture of the poultice. It is, however, far less easily communicated than ringworm, as it develops much more slowly, and therefore requires to be undisturbed for some days after deposition, the most favourable position being at the orifice of the hair follicle;‡ these conditions are therefore seldom fulfilled, except among the unclean and neglected, and it is therefore where dirt and squalor reign that it finds most congenial quarters.

Kaposi says it is very rare for it to spread in a family, school, or community, but this is surely an error. The following cases came under me at the East London Hospital for Children:—The disease was probably derived from a cat, in which the hair came off in patches. The family lived in great poverty and dirt, and their heads swarmed with pediculi. A girl, æt. seven, was the first

* *Brit. Jour. Derm.*, vol. iii. (1891), p. 101. A generalised case (photo). He refers to a case of Gull's with the nail affected.

† Fabry, *Archiv f. Derm. u. Syph.*, 1890, p. 21, illustrated.

‡ Peyritsch found that if the skin immediately round a hair was pricked, and water impregnated with favus spores deposited immediately on it and allowed to evaporate, inoculation seldom failed, but it took three to six weeks to develop (quoted in Hebra, vol. v., p. 163).

infected; when seen, six months after infection, the whole scalp was affected, and there were patches on the shoulders and arms. A brother, æt. nine, was next attacked, four or five months before he came to the hospital. It began in the front of the ear, and

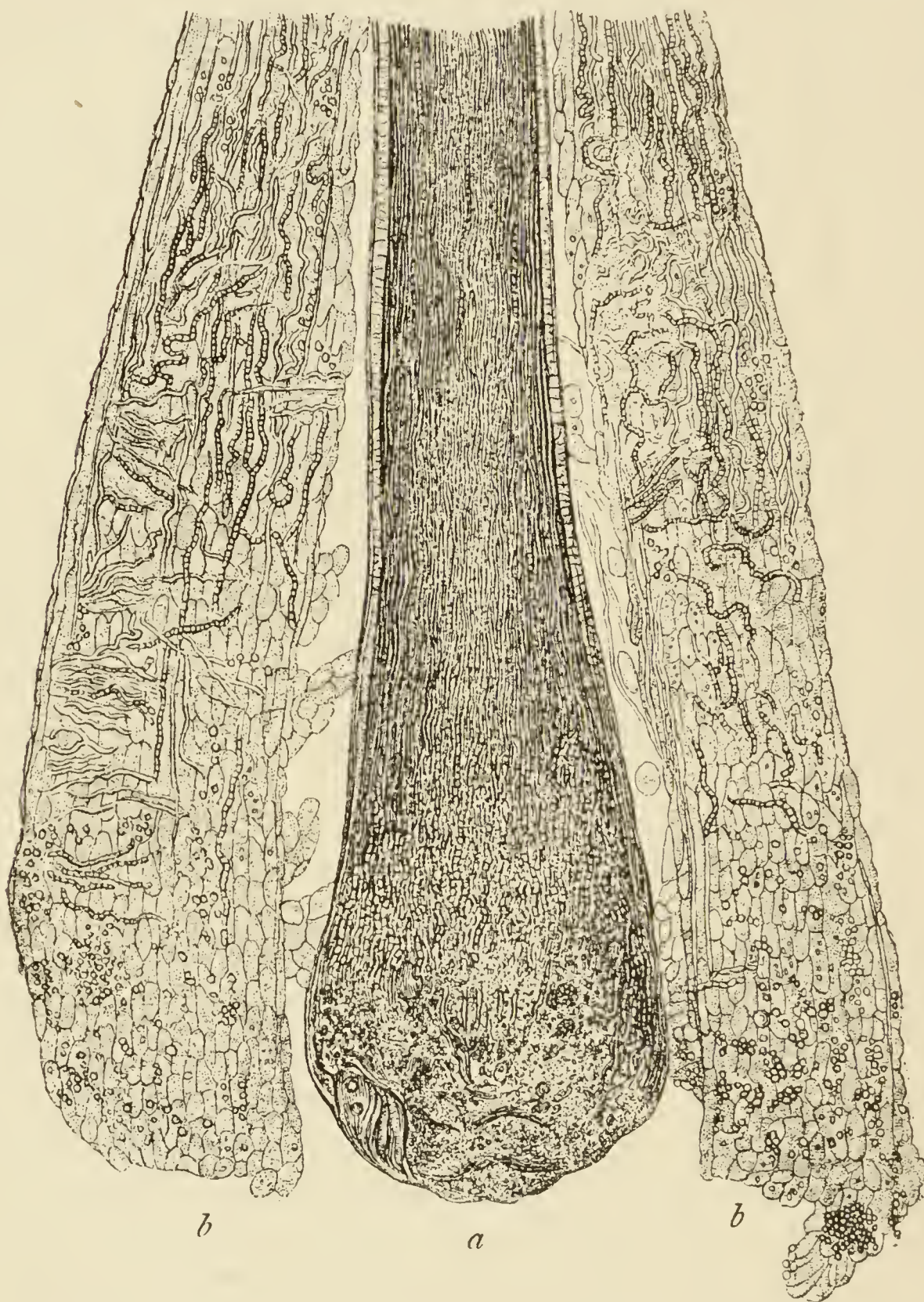


Fig. 89.—Hair shaft and hair bulb from favus. $\times 700$ (Kaposi).
a, hair bulb; *b*, *b*, root sheaths, both being abundantly infiltrated with fungus.

spread all over the head in a month; it appeared on the arms about the same time, but had only been present for a month on the thigh. The largest isolated patches were of the diameter of a good-sized pea, but compound patches were sometimes two inches in diameter; the glands in the neck were much enlarged, but

where the hair was not cut, it was full of nits. Another brother, æt. eleven and a half, had only had the disease one month, and it was limited to the right parietal region. Cases which have arisen in hospital from contact with a favus patient have already been mentioned, and I have witnessed one occurrence of the kind.

Pathology.—The disease is due to the infiltration of the epidermis and hair follicles with the mycelium and spores of a fungus which is usually called achorion Schönleini, though some observers claim that this comprises several distinct species. The spores generally gain access into the skin by the orifice of the hair follicles, where they have sufficient space to develop round the shaft of the hair, and separate the layers of the epidermis between which it grows, and, except in the neighbourhood of the hair where it is held down, elevate the upper portion of the epidermis to about one-sixteenth of an inch above the surface at the periphery, sloping down towards the centre, and thus the well-known cup shape is produced. The rete cells below are soft, and get depressed by the downward pressure of the growth, and if not released by the removal of the favus mass, ultimately atrophy, together with the immediately subjacent tissue, and thus produce atrophic scarring. More or less inflammation of the cutis is produced by the presence of the fungus, and Robinson attributes the cicatrisation to this cause; he also describes cystic degeneration of the sebaceous and sweat glands, and consequent retention of secretion. Leloir and Vidal figure also the dissociation and infiltration of the connective tissue by the fungus spores.

Unna ascribes the cup shape, which is present even when the scutulum is not seated at a hair follicle, to unequal growth, the base and sides growing more vigorously than the centre of the scutulum, which at first rests on the lower strata of the horny layer, and is surrounded by the middle and upper strata which compress it, though it may become free subsequently. A distinguishing feature of the scutulum, he says, is the perpendicular growth of the filaments from the horny layer.

Anatomy.—When a section is made through a scutulum, there is first a layer of horny cells; beneath this lies the scutulum, still in the horny layer, and consisting solely of hyphæ and spores, Unna * and Kellogg say with the

* *Histopathology*, p. 386, gives elaborate description of the anatomy of the scutulum.

mycelial threads growing perpendicularly, which Unna regards as a characteristic feature of favus. This differs slightly from Bennett's original description. He says that at the top of the scutulum there is a layer of finely granular, viscid material, consisting of a mixture of disintegrating epidermic cells and gland secretion, and this is continued for a considerable depth, and forms a kind of supporting stroma for the long mycelial threads, which give off branches more and more frequently, until they terminate in the production of conidia, which become so abundant, that the centre appears to consist of little else. Individual threads of mycelium may be smooth-bordered, small, and with or without septa and nuclei; but most of them are moniliform, the individual segments varying in length and diameter, but thicker as a whole than the smooth-bordered threads. The spores may be globular, discoid, oblong, or polyhedral, with a central nucleus, and this, when large, gives the appearance of a double contour.



Fig. 90.—Fungus elements from the under surface of a favus scutulum.
× 700 (Kaposi).

Unna and Mibelli agree that the bulb is always free from fungus, and that the hair sheaths rarely, and the hairs themselves never, show splitting. There is always atrophy of the sebaceous glands, and in the late stage the elastic tissue is completely atrophied. Cocci and other foreign bodies are only found in old broken-up crusts, never in the recent scutulum. To see the fungus in the hair, the latter must be soaked in the B.P. solution of caustic potash (6 per cent.) and flattened out slightly; both mycelia and conidia can then be shown abundantly in the hair shaft, running for the most part, but not altogether, parallel to the axis of the shaft. It appears probable that the fungus gains entrance into the hair at the bulb where the cells are soft, though, to a less extent, it may invade the hair through the cortex also, but it does not seem to go much beyond the level of the root sheaths. The threads and conidia run in all directions, and in parts, get between the root sheaths and the hair shaft, and separate the latter more or less from its attachments, so that it is, as a rule, easily

withdrawn. One of the results of the injured nutrition of the shaft is, according to Aubert and Robinson, a longitudinal striation caused by air between the fibres, which simulates mycelium. Robinson considers this characteristic of favus, as it is not present in trichophyton tonsurans. In the ringed, scaly form of eruption, which is seen on the free surface, the fungus elements spread laterally between the epidermis layers, while in the nails it develops very much in the same way as in the hair shaft.

The Nature of the Fungus.—Although Schönleinii in 1839 first demonstrated the fungus which Remak christened after him, he did not recognise its etiological significance, which was first demonstrated independently with a detailed description by Gruby in 1841.

The unity of the fungus in human favus remained undisputed until 1886, when Quincke isolated three species α , β , γ , afterwards reduced to α and γ , the α fungus having been found in three cases only. Gerlach had previously discovered a favus-like affection in fowls, due, as Mégnin showed, to the epidermophyton gallinæ, while Costantin and Sabrazes demonstrated a dog variety oosporocanina. Unna and Frank found three varieties, since increased to nine. In 1894, Bodin* again investigated the subject in the light of Sabouraud's observations on ringworm fungus, and came to the conclusion that, while there is a clinical unity in favus, *i.e.*, that any variations in the clinical aspect of the disease do not correspond with microscopical and cultural differences, as is seen in ringworm, nevertheless he makes out five varieties:—1. The achorion Schönleinii of Kral. 2 and 3. Two species not previously described. 4. Achorion entythrix of Unna. 5. The achorion atachton of Unna. On the other hand, Elsenberg, Kral, Dubreuilh, Pick, Mibelli, Plaut, Jadassohn, Marienelli, and Biro all agree that there is only one species. In 1893, Dubreuilh and Sabrazes again affirmed this. Kluge† also in 1896 found Quincke's γ fungus only in six cases, both on the hairy and glabrous parts; and Danielssen,‡ after numerous inoculations on the human subject, concluded from the uniformity of his results that the achorion Schönleinii was the only fungus of favus. Obviously further research is required before the matter is beyond controversy, but the great variability of fungi under cultivation according to the media and to temperature, moisture, and access to air, must always be borne in mind, as Leslie Roberts's work demonstrates, and as Tischonthisie showed from 1000 cultures on fifty different media. An acid medium was the best.

Diagnosis.—Favus is one of the most distinctive of skin diseases. The sulphur-yellow, cup-shaped scutula, with a central hair, if situated on the scalp, are quite unmistakable.

In the later stage, when isolated scutula have coalesced into an irregular, mortar-like mass, some care is required to distinguish it from *psoriasis* of the scalp. The edges keep their yellow colour

* *Annales de Derm. et de Syph.*, vol. v. (1894), p. 1220. References to date. There is an error in his quotation from Quincke, where he says that it is β and γ which are left, instead of α and γ .

† Kluge, *Derm. Zeitschr.*, vol. iii. (1896), p. 141.

‡ *Atlas of Vegetable Parasitic Diseases*, Bergen, 1892.

longest, the scales are less nacreous than those of psoriasis, and the loss of hair is much greater; and if there is any atrophic scarring, that would at once exclude psoriasis, in which the hair also preserves its lustre, while it is soon lost in favus. Of course, if the idea of favus was once suggested, the microscope would solve the difficulty, and close examination would probably discover some yellow discs round the hair in some parts.

When the scutula have fallen off or been rubbed off, unless there is scarring, it might be mistaken for seborrhœa, a scaly eczema, a psoriasis, or tinea tonsurans.

Eczema and seborrhœa, however, are diffuse diseases with ill-defined borders, while in favus the border would be rounded and defined. Any loss of hair also that there may be, would not be in patches, but rather a general thinning, and there would certainly be no scarring. It is in the absence of this only, that difficulty can arise with any of these affections.

In *ringworm*, the resemblance may be very close, and even the microscope will not decide it always with certainty, and a cultivation on potato or a suitable gelatine medium * might in rare cases have to be made.

In examining the scales for fungus, it must be remembered that all the scales are not fungus-bearing, and it is necessary to examine scales and hairs from several places, and that carefully, following the directions already given for the detection of fungous elements. If these be found, it is not always possible to decide what form of mycosis is present from the conidia and mycelium, as they present great variation in aspect, even in the same species, but the distinctions laid down by Kaposi are true in the main, and are as follows: "In the achorion this consists in a predominance in the conidia forms, and in the great variety they exhibit as to size, and conformation, in the comparatively short and remarkably jointed appearance of the mycelium, the scarcity of the smooth-bordered variety, and the ease with which it breaks up into single cells. In *trichophyton*, the greater tenacity and stretched appearance of the much-branched and for the most part smooth-bordered mycelium, and the small number, uniformity, and comparatively small size of

* A case by Fortunet and Courmont (*Annales de Derm.*, vol. i. (1890), p. 239) demonstrates well the difficulty sometimes experienced. Neither clinically, microscopically, nor culturally was a diagnosis possible until a culture was inoculated on the head of a mouse, when typical favus was produced.

the conidia, are the chief features. In the microsporon furfur, the peculiar arrangement of the conidia in heaps or clusters and their uniform and large size are the main characteristics."

Careful attention to these criteria will assist in coming to a right conclusion, but they should always be taken in conjunction with the clinical features and not be relied on exclusively. As a last resort in cases of extreme difficulty, the disease may be left untreated for a time, and in a week or two, if it is favus, some new yellow crusts will begin to form, while, if ringworm, the disease will show signs of spreading, with the production of new foci.

Prognosis.—Although the disease is very obstinate and tedious, it may always be ultimately cured by steadily-persevered-in, judicious treatment. Thus a case of mine which had lasted thirteen years, was cured by treatment in a year and a half. Favus is much more tractable on the skin than on the scalp, and is curable in a comparatively short time. Beyond the permanent baldness and scarring, favus was regarded as incapable of doing serious injury to the health until Kaposi's fatal case of universal favus already alluded to.

Treatment.—The treatment of favus of the scalp is of threefold character. The crusts must be removed, the epilation of the affected hairs efficiently practised, and parasiticides applied so as to penetrate as deeply into the tissues as possible. For the removal of the crusts, carbolised olive oil should be copiously rubbed in, and also left to soak in, by applying strips of flannel soaked in oil fastened on with a cap; in twelve or twenty-four hours, the crusts can be removed with a paper knife, and then the whole scalp should be thoroughly cleansed with soft soap. Epilation can then be proceeded with. Kaposi recommends that this should be effected by seizing some of the hair between the thumb and a flat surface like a tongue spatula; the force thus used is only sufficient to draw out the diseased hairs, leaving the healthy intact, and he claims that the process is almost painless. Parasiticides must then be rubbed or brushed in vigorously. These three measures should be daily repeated until a cure is effected, but as the diseased hairs become fewer, epilation must be practised with forceps, pulling them out singly, and in the direction in which they are growing. Where they are more numerous, the large broad-pointed forceps, suggested by Dyce

Duckworth, are of service, but the operation is too painful for very young children.

The parasiticides, which should be applied immediately after epilation, are of the same kind as those recommended for tinea tonsurans, to which the reader is referred. I cured one case of twelve years' duration with resorcin 3j to 3j of lanolin and oil. Mibelli recommends 20 per cent. of oleate of copper, and washing with soft soap and spirit every two or three days.

I have found a combination of 10 per cent. oleate of copper, 3 to 5 per cent. chrysarobin, and lanolin and lard for the base, a very good application. Like all chrysarobin applications, it must not be used close to the face.

After continuing these plans daily as long as there is any visible disease, which will take at least three months, and often more, a rest of a week, or more, may be given, to see if any fresh yellow spots develop; and when these appear, they must be attacked vigorously, as before, each hair being removed with forceps. The disease may be considered cured, when even after six weeks' discontinuance of treatment there is no localised scalliness, much less a scutulum, and no loose, dull, degenerated hairs to be found. The treatment and necessary observation require therefore at least six months.

On the free surface, all that is required is to soften the crusts with oil, remove them and all epidermic scales by thorough washing with soft soap, and then rubbing in one of the parasiticides recommended in tinea circinata, or painting on linimentum iodi; two or three weeks of such treatment are, nearly always, sufficient for a cure.

Favus of the nails is most quickly cured by avulsion of the nail, and applying the parasiticide directly to the parts beneath, but this severe procedure is rarely absolutely necessary, the treatment for tinea of the nail being equally efficient, though more tedious than avulsion.

Favus-like lesions of the oral mucous membrane due to the aspergillus nigrescens have been described by Winfield* of Brooklyn. It was supposed to have been derived from eating mouldy cheese. The disease was present on the hard and soft palate, the patches were œdematous, lumpy, and covered with a dirty yellow deposit firmly

* *Amer. Jour. Cut. and Gen. Ur. Dis.*, January, 1897.

attached to the swollen tissue beneath, and there was slight bleeding on removal. The colour of the recent deposit was that of favus scutula, but the older was of a greyish-brown. The disease was removed by the application of a twenty-five per cent. ethereal solution of peroxide of hydrogen. The unusual yellow colour may be explained by some observations of Delépine.* On removal of strapping which had been round a fractured thumb for a month, new patches of sooty material were noticed, each with an ulcer in the centre. This was found to be due to the *aspergillus niger*. Cultivation experiments showed that the fungus developed best under warmth and moisture, and under these conditions on potato and glycerine agar a bright yellow pigment was developed.

TINEA TRICHOPHYTINA.†

Synonym.—Ringworm.

Deriv.—*Tinea*, a moth, a worm.

The fungi of ringworm, by their presence in the tissues, excite lesions of different aspect, according to the region of the body attacked. The difference in appearance is so great that these regional variations were formerly thought to be separate diseases, and had distinctive names ; and although they are now universally acknowledged to be only varieties of ringworm, it is still convenient to retain these names and to describe their clinical aspects separately.

The varieties are *tinea tonsurans*, or ringworm of the head ; *tinea circinata*, or ringworm of the body ; *tinea barbæ*, or sycosis, ringworm of the beard ; *tinea cruris seu axillaris*, ringworm of the pubic region and axillæ, often called *eczema marginatum* ; and *tinea unguium* or *onychomycosis*, ringworm of the nails. The lesions also differ according to the kind of ringworm fungus producing them.

* *Trans. Path. Soc.*, 1891, p. 424, and plates. Abs. in *Brit. Jour. Derm.*, vol. v. (1893), p. 121.

† The generic name "herpes," used very generally on the Continent for ringworm, is justified by its derivation, *ἑρπειν*, to creep, but the term "herpes" is now so identified with the signification of groups of vesicles, and the parasitic origin of the ringworm group is so universally acknowledged, that *tinea* is more distinctive and expressive of the nature of the disease.

TINEA TONSURANS.*

Synonyms.—Ringworm of the scalp; Herpes tonsurans; Tinea tondens; Porrigo furfurans; Trichonosis furfuracea; *Fr.*, Herpès tonsurant; Teigne tondante; Teigne tonsurante; *Ger.*, Scheerende Flechte.

Tinea tonsurans is one of the most common skin diseases in this country. In my clinic it forms 10 per cent. of all cases, or taking all varieties of it together, 13 per cent. On the other hand, McCall Anderson's public statistics give only 7 per 1000 for the scalp, while all the ringworms together constitute only 14 per 1000; Bulkley's cases altogether were rather over 4.3 per cent. while the statistics of the American Dermatological Association for 1897 yielded only 3.27 per cent. Practically it may be said to be confined to children; and although its direct effects upon the skin are usually insignificant, yet, owing to its being contagious and obstinate and the social ostracism it entails—interfering with education, etc.—its occurrence in a family or school is a real calamity, and it demands the greatest attention from the practitioner.

The modern investigations into the fungi which produce ringworm, initiated by Sabouraud, having in their main lines been confirmed by subsequent workers, it is necessary to treat the clinical aspects of ringworm from the pathological standpoint, and the pathology must, therefore, take the first place in the consideration of the subject.

Pathology.—It has long been undisputed that the varied appearances described under the comprehensive title ringworm are due to the presence of fungus elements in the epidermis, the hair follicles or hairs, or in the nails; but in spite of Gruby's observations in 1843, up to the present decade it was universally thought that

* *Literature.*—For the history of the disease and the prophylaxis and treatment as carried out in France, consult Feulard's *Teignes et teigneux* (Paris: 1886); for *résumé* of English methods of treatment, Aldersmith on Ringworm, 1898; and for pathology, Sabouraud's writings, especially *Les Trichophyties Humaines*, with atlas of illustrations (Paris: Rueff, 1894); Malcolm Morris's *Ringworm*, 1898—a good critical review of modern research with abstracts of references to recent work. Fox and Blaxall, *Brit. Jour. Derm.*, vol. viii., 1896, is a valuable record of laborious work. E. Bodin, *Les Champignons parasites de l'homme*, 1902—a good general *résumé* of the subject to date.

only one fungus was the *fons et origo mali*. Then Sabouraud, with the advantage of modern methods and inexhaustible patience, not only confirmed Gruby's results, but gave them a wide extension, and inspired a host of workers to investigate the subject on the same lines, the outcome of which will now be set forth. The fungi of ringworm may be divided into two main groups, the small-spored and the large-spored, or, the trichophyton microsporon* and the trichophyton megalosporon. Certain subdivisions of these will be described when each species is considered separately. Some even now think that the position of the fungus in the hair is a question of soil rather than of origin (*vide* Tinea Ciliæ).

Trichophyton Microsporon,† or **Microsporon Audouini**, the small-spored fungus. This fungus was described by Gruby in 1843, as the cause of "porrigo decalvans," the old name of Bateman for alopecia areata, hence the importance of his observation was overlooked, until Sabouraud showed that Gruby really described it as a cause of one kind of ringworm. It is the cause of at least 90 per cent. of ringworm in England, 52 per cent. in Boston, U.S.A., and 65 per cent. in France—or rather, in Paris, as Dubreuilh and Frèche did not find it at all in Bordeaux. It is also practically absent in Italy,‡ and North and South Germany, except Hamburg, where it is uncommon. It is well known in Barcelona (Fergnani).

Two closely similar species have been found on animals, one by Sabouraud and others on the horse, and one by Bodin on the dog, and they have been inoculated on the human subject

* Sabouraud restricts the generic term "trichophyton" to the large-spored group, as the microsporon had "pectinated spore-bearing hyphæ;" but Fox and Blaxall by employing a different method of cultivation showed that when fructification took place in the presence of air, spores like those of the trichophytos were produced, and even chlamydo-spores, like trichophyton ectothrix.

† Mr. George Pernet has been working with me for some years at University College Hospital. For a long time, he examined nearly every case of ringworm microscopically, and when thought necessary, culturally, and when it is stated that any particular form of fungus is found with special clinical features, it is the result of his investigation. His paper on 130 cases of ringworm is published in *Lancet*, October 1st, 1898, p. 868. See also Pernet, *Encyclopædia Medica*, vol. xi., 1902.

‡ Mibelli has met with one case at Parma due to the microsporon of the dog.

with clinically and microscopically nearly similar results to the human species, but they all differ from one another culturally in many points. Bodin also has shown that there are two forms of microsporon of the horse which produced a scaly and smooth form of ringworm in that animal. Sabouraud lays stress upon the point that the microsporon is the only one of the ringworm fungi which is capable of passing through a complete developmental cycle with the production of ectospores, while parasitic on the human subject.

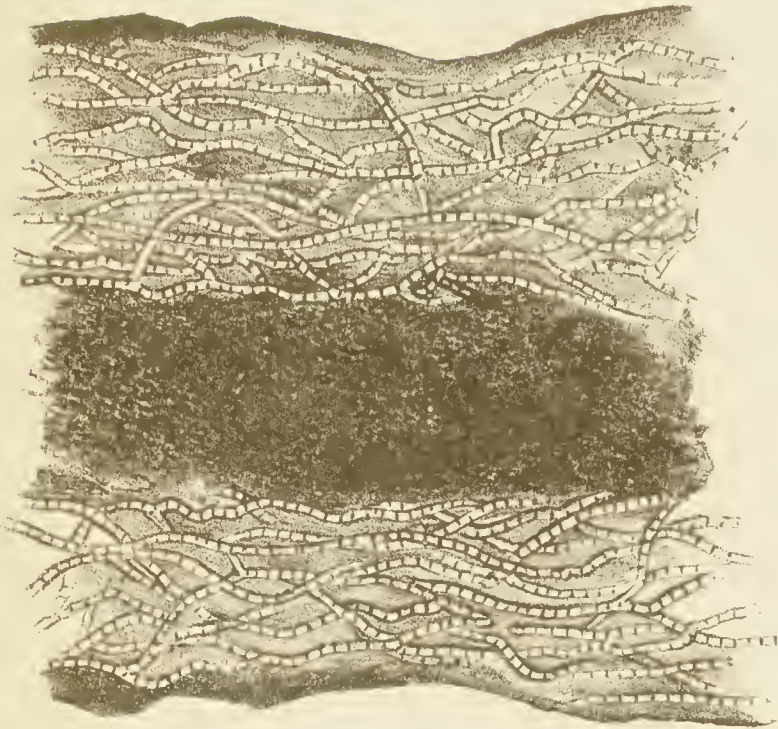
"Hence," he says, "it is so extremely contagious among children, and difficult to cure. It grows throughout the hair in a long-jointed mycelium; from this branches pass outwards towards the surface of the hair, and fine branches at length penetrate the cuticle; on these fine branches when they reach the surface of the hair are formed the ectospores, so that the very closely arranged mass of spores seen surrounding the hair in cases of microsporon ringworm is entirely made up of ectospores varying from two to three μ in diameter."

Colcott Fox denies the accuracy of this description, because (a) the hair itself is only invaded after the mosaic begins to form on it; (b) the cuticle is stripped off rapidly at an early stage; (c) he can find no proof of Sabouraud's theory.

The mode in which the fungus gains entrance into the hair substance has led to much discussion. The older and more generally held view was, that the fungus entered at the orifice of the hair follicle, penetrated between the shaft and follicle, and passed downwards until it reached the softer cells of the bulb, and was then carried up by the growth of the hair, the mycelium insinuating itself between the hair fibres. This is what Balzer calls the theory "du détour" (see plate iv.). The other, or direct, theory is supported by Unna, who says that, a short distance down the follicle, the fungus passes under the cuticle of the hair shaft into its substance, and then extends down to the bulb and up into the shaft. It is probable, therefore, that the fungus may get into the shaft by either route, according to circumstances favouring the one or the other.

Leslie Roberts finds that the fungi have a keratolytic action corroding the outer part of the hair shaft, even in a cultivation. This view is supported by what is known of *onygena equina*, a horn-destroying fungus, which grows on horn, hoofs, etc., and the

TRICHOPHYTON TONSURANS.
(Ringworm Fungus.)



Megalosporon.

FIG. 2.—An Endothrix. From a case of several years' duration.

FIG. 3.—An Ectothrix. From Kerion.

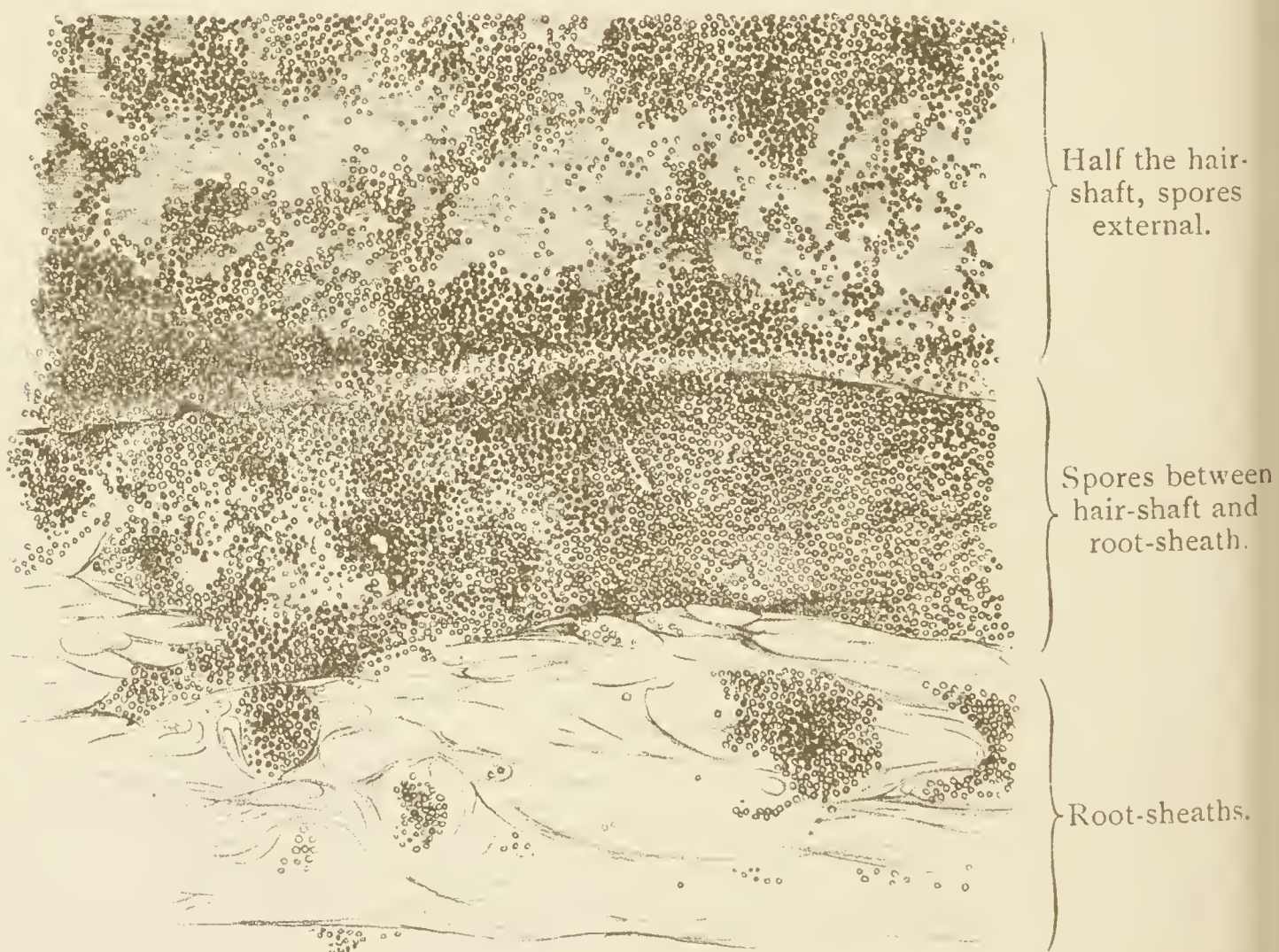


FIG. 1.—Microsporon.

TRICHOPHYTON TONSURANS.

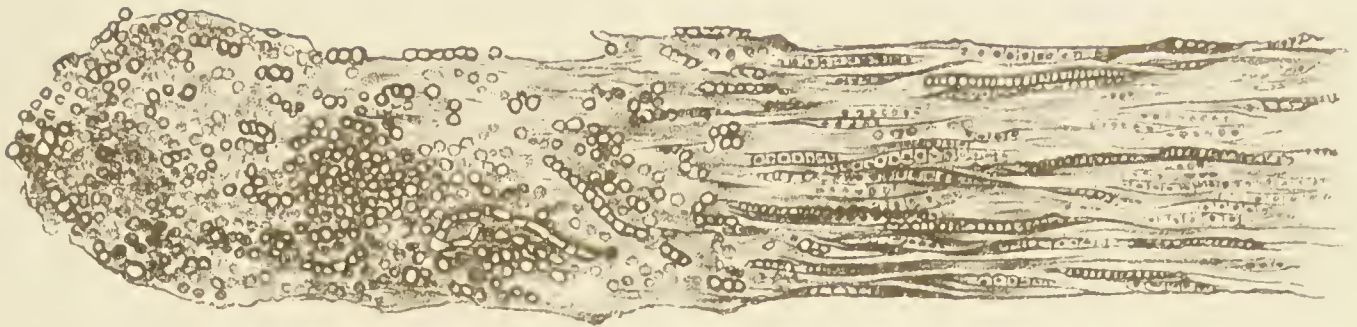


FIG. 1.—Hair from the back of the first phalanx of a finger, in which the nail was affected with *Trichophyton Endothrix*.

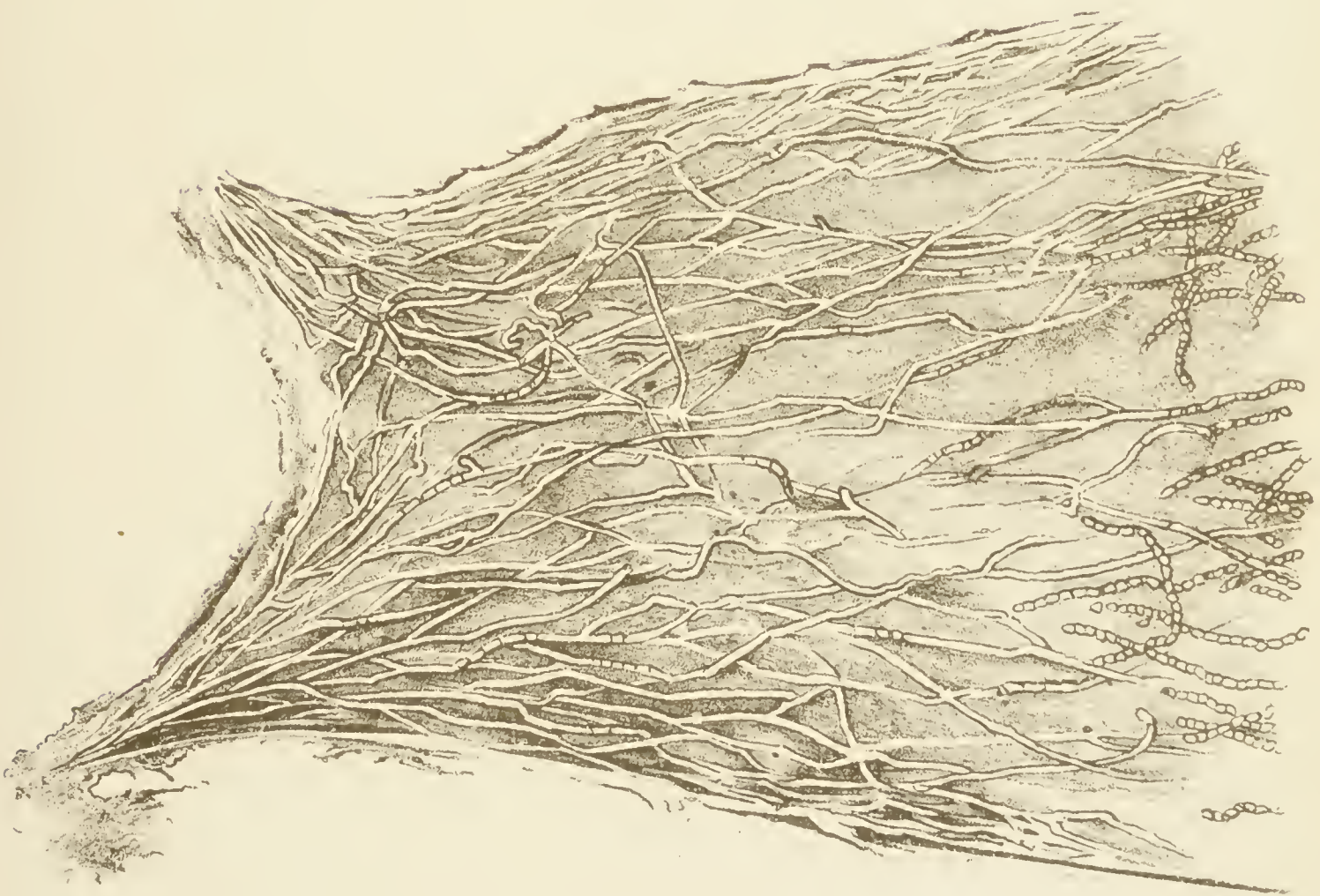


FIG. 2.—Root-end of hair from *Trichophyton Endothrix*, showing mycelium and commencement of sporulation.

life-history of which has been worked out by Professor Marshall Ward of Cambridge.*

MacFadyen† finds that the ringworm organism produces a proteolytic enzyme which liquefies gelatine rapidly. It is capable of acting when greatly diluted, and acts best at or near blood heat; it is favoured by alkalinity and hindered by acids; it is destroyed at a temperature of 212° F., but ordinarily is very stable.

Waelsch‡ found that the fungus penetrates the cortex of the hair at different distances in rising and descending, but spares the bulbs. It also forms a reticulum of filaments round the hair. It develops equally well in the deeper horny cells and the cells in process of keratinisation in the hair follicle. Waelsch is of opinion that differences of structure determine the differences in the fungus.

Symptoms.—Microsporon ringworm,§ which is the type of the disease in England at all events, begins as a red papule round a hair, which soon becomes a small, round, well-defined scaly patch, pale or greyish-red, but covered with fine white scales. It spreads peripherally; and as the fungus gets down into the follicle, by the time the patch is the size of a threepenny-piece, if not before, the hair shows signs of damaged nutrition. The patch continues to enlarge up to the size of a florin, or even a crown-piece, seldom larger, preserving its rounded outline, unless two or more meet and coalesce into an irregular patch with gyrate outline, of almost any size, but with the borders always sharply defined. The larger patches are distinctly thickened and scaly, of a dirty greyish hue, and at first sight bald, but close inspection with a lens always shows that the patch is covered with stumps of hair, dull and lustreless, bent or spirally twisted, sticking out in all directions, instead of having a definite "set," and so brittle, that if an attempt is made to pull them out, many break off at or below the surface. They are usually from one-sixteenth to one-eighth of an inch long, sometimes a quarter of an inch, and a white sheath,

* *Royal Society*, May 4th, 1899; abs. in *Nature*, 1899, p. 92.

† *Brit. Med. Jour.*, September 22nd, 1894.

‡ *Archiv f. Derm. u. Syph.*, vol. xxxv. (1896), p. 23; abs. in *Annales*, vol. viii. (1897), p. 150.

§ Author's Atlas, plate xcii., figs. 3 and 4.

made up of spores, extends a short distance up the shaft of a good many of the stumps, if the case has not been previously treated.

When a stump has been soaked sufficiently in liquor potassæ, B.P. (*e.g.*, half an hour), and placed under the microscope, it is seen to be ensheathed by round spores, or conidia, of from $2\ \mu$ to $3\ \mu$ closely pressed together in a mosaic. By pressing gently on the cover-glass the spores of the sheath may be more or less separated, and the hair shaft exposed, and it can then be seen that the spores were outside the hair. By further soaking and pressing a delicate mycelium running more or less parallel with the hair can be discerned with a high power inside the shaft.

Variations.—In very fair and fine-haired children, instead of the hairs sticking up, they lie close to the skin, spirally twisted like the fibrils of wool, almost matted together, and looking dull and thickened, and covered with powdery-looking *débris* of fungus-bearing epithelium, which gives them a white colour.

In the same class of children, when the bulk of the disease has been removed, a few pustules may sometimes be seen here and there, in and around which, on close inspection, may be found some remnants of diseased stumps, which have set up the inflammation; but as a rule, inflammatory signs are inconspicuous in microsporon ringworm. In young infants, where the hair is fine and scanty, and in older children, only where the hair is thin, there are distinct rings, the disease closely resembling *tinea circinata*. The hair follicles may or may not be involved subsequently, but the disease in this form seldom gives much trouble as it is superficial. I have seen these rings even in a child of three.

An important but rather uncommon variation of peladoid ringworm, probably of microsporon origin, is what Liveing called **bald tinea tonsurans**, in which the disease commences in the ordinary scaly patches, but after a time the hair in one of the patches falls out, and the scalp becomes as smooth as in alopecia areata, and on the borders of the patch the short, characteristic hairs of alopecia areata may frequently be found. Curiously enough, when one patch takes on this condition, the others almost invariably follow suit; but during this transition period, the bald and scaly patches may be seen simultaneously, and these are the

cases recorded from time to time as alopecia areata, complicated with tinea tonsurans. I have, however, seen patches of alopecia areata develop on the head of a child, with patches of microsporon ringworm away from the original ringworm, but this is extremely rare. Colcott Fox * has also had a case of this kind. When all the patches have become bald, the history of commencement in scaly patches will be the only guide to the mode of origin of the disease, though careful microscopical examination of some of the hairs immediately round the patch will generally detect the fungous elements. Many cases, however, are bald from the first, and some of these occur in families where the rest present ringworm in the usual form. Pea-sized, smooth, bald spots are seen in some large-spored forms in which stumps require to be diligently searched for. In a few cases, microsporon has been found. (See also under Alopecia Areata, in which instances of epidemics of so-called alopecia areata are related.)

Persistent Scaliness.—Another condition that leads to difficulty is where, under treatment, the great bulk of the diseased hairs have been removed or fallen out, and the scalp remains persistently scaly. Such cases are often erroneously considered to be no longer infectious, and allowed to mix with other children, but the disease is still rampant, and careful examination will always find some diseased stumps.

On the glabrous skin, the microsporon may occur alone, or, in about twenty per cent. (Pernet), associated with scalp lesions.

It produces as a rule, far less actively inflamed lesions than the megalosporon. At the same time Sabouraud's statement that the lesions are always insignificant is not borne out by my experience, for as a rule the inflammatory phenomena, although mild, are of a decided character, and rings, sometimes concentric, are quite as frequent as solid patches.

It is said never to attack the beard or nails, and on the scalp to be exclusively a disease of early childhood, rarely beginning after eight years old, never after fourteen, and after the age of fifteen is never seen, all adult cases of ringworm of the head being large-spored.

These statements as to age are, in my opinion, too definite except as regards adults. I have recently seen a microsporon commencing on the scalp of a boy over fourteen, and another in

* *Brit. Jour. Derm.*, vol. xiv. (1902), p. 261.

a youth, æt. nineteen, who had contracted it from his sister, æt. eleven, in whom it had existed for two and a half years.

Tricophyton Megalosporon Endothrix. So far megalosporon endothrix has only been found in the human subject, and, according to Sabouraud, 72 per cent. of large-spored cases are due to this form, of which there are two species: megalosporon endothrix with resistant mycelium (42 per cent.), and megalosporon endothrix with fragile mycelium (30 per cent.).

They have respectively a crateriform and acuminate culture. Whether these figures are true for other countries than France cannot be stated.

In both varieties, the characteristic features are, mycelial threads composed of chains of doubly contoured spores. This sporulated mycelium is in nearly parallel lines within the hair shaft, commencing at the root, running throughout the whole length, and branching dichotomously from time to time as it grows up the hair shaft, and seldom breaks through to the exterior of the hair.

T. Megalosporon Endothrix with fragile mycelium produces *la ton-dante peladoide* of Sabouraud, the black dot ringworm of Aldersmith. The chain formation is indistinct; first, the spores are crowded together and of rounded outline, so that in the chains a moniliform appearance is produced. These chains break up easily during examination after soaking in potash, and thus the moniliform appearance and fragility of the mycelium are distinguishing features. (Plate iii., fig. 2.)

Clinically, megalosporon endothrix with fragile mycelium contrasts with microsporon tinea tonsurans in the absence of fine white scales (with rare exceptions), the paucity of stumps, and the patches being less definitely circular.

At first sight, there is an almost smooth baldness often affecting a large area from partial coalescence of neighbouring patches, but the baldness is not like that of alopecia areata, but incomplete, partially broken up by ill-nourished hair, while the small balder spots from half an inch in diameter show, on close inspection, some of the stumps broken off level with the surface, and only looking like dark dots; these have no hold on the skin, and when drawn out are a sixteenth to a twelfth of an inch long. A few project from a sixteenth to an eighth of an inch above the surface, but they generally break off if an attempt at epilation is made;

still fewer are a quarter or third of an inch long, slightly spiral or curved.

None of them have the white sheath of the microsporon stumps, but are swollen, dull, and brittle. There is sometimes slight redness and crusting, and at others smooth, bald, depressed, pea-sized spots, round which it is often difficult to find any stumps.

Circinate rings on the epidermis are said to precede the hair invasion, but they are fugacious and seldom observed, and when the hair is attacked these rings disappear.

There is no age limit on the scalp in this form, adults in rare instances being attacked.

In *T. megalosporon endothrix* with resistant mycelium, the mycelium does not easily break up and the segments are square, so that Sabouraud aptly compares it to a ladder. (Fig. 2, plate iv.)

The clinical appearances are less constant, and while they are easily distinguished from microsporon cases, they are not very distinct from the fragile form. C. Fox relies most on the baldness being less pronounced and the unequal length of the stumps, and there being fewer broken off level with the skin, which between the stumps is smooth and apparently normal, but even in the peladoid form, stumps of variable length above the surface are to be found as well as the black dots. Microscopical examination at least would therefore generally be necessary to decide the point of which the practical importance is not very great.

One form of disseminated ringworm (of Aldersmith) is also seen with this fungus. Small groups of stumps sometimes broken off level with the skin may be scattered about amongst the healthy hair. There may or may not be small bald areas as well as these scattered foci. Disseminated ringworm may also occur in connection with the microsporon fungus. Endothrix is sometimes pyogenic, and may then produce kerion.

In neglected cases, or in those of very long standing, the great bulk of the disease clears up, and there may be no distinctly bald or semi-bald patches, but in some places, the hair looks lustreless and breaks easily, and close inspection alone reveals here and there a solitary stump or small collection of broken-off hairs, scattered more or less over the whole scalp. Such cases require great care for diagnosis and great perseverance in treatment.

T. Megalosporon ectothrix * is of animal origin, though it may be transmitted from man to man. Fox estimates the frequency of scalp ringworm due to this fungus as "perhaps 5 per cent.," and confirms Sabouraud's dictum that it produces all cases of tinea sycosis and tinea unguium. Fox also says that it causes more than half the cases of tinea circinata, and reckoning all sites, half of all large-spored ringworms. This does not quite accord with Pernet's estimate of tinea circinata, who, as already stated, found that both forms of large-spored together only produced half the cases of tinea circinata.

So far, however, in tinea sycosis we have only found ectothrix, and in tinea unguium it is also the rule, but endothrix has been found twice by Pernet. (*Vide* plate iv., fig. 1.) In another private case of his of twenty years' standing, the endothrix was proved by culture as well as by the microscope.

Clinically, the appearances vary considerably, but it is often pyogenic (*i.e.*, can excite pustular inflammation without the intervention of pus cocci), hence it is almost exclusively responsible for all the pustular varieties of ringworm, such as kerion of the head, tinea sycosis, and what was described by Leloir as *conglomerative pustular folliculitis*. This fungus is derived directly or indirectly from the horse, cat, dog, calf, pig, and sheep, etc. It also produces many dry forms of tinea circinata, including probably all the cases which sometimes cover large areas with complicated patterns,† even when there is no vesiculation or pustulation. There is generally, both on the scalp and smooth skin, more marked inflammation than is usually seen either in microsporon or megalosporon endothrix; but in some cases, on the other hand, the inflammation is of slight degree. In a lady who contracted T. circinata on the nose and cheek, there were distinct scaly rings not more marked than on an average microsporon case, while on the chest the border of the rings were an eighth of an inch wide, and looked excoriated.

Microscopically, the fungus is limited to the intra-follicular region, with the possible exception of a few mycelial threads which extend a little higher up. It forms a sheath between the

* Endo-ectothrix is the more strictly accurate term, for Sabouraud now admits what other observers have found, that the fungus, though mainly outside, may eventually invade the hair substance.

† *Vide* Author's Atlas, plate xciv., fig. 4, and Danielssen's, plate xx.

hair and the follicle, but it may to a slight extent also invade both structures, but nearly all of it is attached to the epilated hair.

As Fox describes it, the spores are agminated in chains, but the sporulation is less regular than in endothrix, and the threads in contact with the root sheath are less completely sporulated, longer and smaller than those in contact with the hair. In the latter, the mycelium is rectilinear and runs parallel with the hair, is sometimes fragile and sometimes resistant.

In all other respects, the microscopical appearances vary greatly except in the same case, or in cases from the same source. Thus the spores may vary from four to twelve μ in length, and about two-thirds of the length in their transverse diameter.

The smallest being thus not larger than many microsporon elements, and although their external position as regards the hair would be a guiding point, some observers, like Malcolm Morris, contend that this feature is more accidental than vital.

In ectothrix mycelium with such small spores, the dichotomous division of the mycelium would be guiding points, and in a few cases, culture would be the only way to decide the character of the fungus.

The great variability of size and other microscopical appearances is readily explained if Sabouraud is correct in saying that there are nearly twenty species of ectothrix recognisable by culture, etc. Some forms have nucleated giant spores. These have been several times observed by Pernet and myself in some of my private cases of *tinea circinata tropica*. (Fig. 93.)

Kerion may be defined as a pustular folliculitis of the scalp excited by the ringworm fungus, chiefly *T. megalosporon ectothrix*. Analogous lesions with a different name may be seen both in the beard and glabrous skin. Commencing usually with bright red spreading circles, but, according to the mothers, sometimes with scaliness, every follicle in the patch becomes the seat of a pustule, and the acuteness of the inflammation and the close aggregation produce a well-defined, considerably raised, convex patch consisting of pustules on a deep red base, the whole mass fluctuating, and bearing a superficial resemblance to a carbuncle, for which it is often mistaken, but there is no induration round the patch, nor deep purplish redness. The hairs are loosened in the follicles

by the suppuration, and are easily withdrawn, and eventually fall out, and thus effect a natural cure ; after their removal, pressure gives exit to a thick glairy mucus, more or less mixed with pus, but there is never any slough, though subcutaneous abscesses occasionally supervene, and in severe cases, permanent baldness may ensue, and even keloid may result. In a case that came under me, enormous comedones, many of them double, studded the surface where the kerion had been, hair being quite absent, the surface being extensively, and in places, hypertrophically scarred.

Although the pyogenic ectothrix, chiefly from the horse, Sabouraud says, occasions most cases of kerion, some observers, as Adamson, C. Fox, M. Morris, and Given, have found the small-spored fungus in relation with it. Fox and Blaxall have five times found the megalosporon endothrix, and Macleod has found it also in a typical case. So far that has not been my experience, except where it has been produced artificially, as sometimes happens with oleate of copper, but even with strong irritants it cannot be excited at will. On the other hand, Pernet took great pains to trace it to the horse, but never obtained proof of such a connection, though it seemed probable in some cases.

The *granuloma trichophyticum* of Majocchi is only a form of kerion, either on the scalp or elsewhere, in which the elevation of the lesions is greater than usual. Several of the cases have been traced to a bovine origin. A separate name is superfluous.

A closely analogous condition to kerion occurs on the glabrous skin, and was described by Leloir as "conglomerative pustular perifolliculitis."* Sabouraud has proved that it is due to trichophyton megalosporon ectothrix, and Leloir's unwieldy title may therefore be dropped, and it might well be called kerion of the glabrous skin. It occurs chiefly on the backs of the hands and forearms, and occasionally elsewhere, in the form of one or two (seldom more) oval or roundish patches from half to three inches in diameter, and raised from a line to a quarter of an inch. The surface is smooth, or slightly mammillated or cribriform, the orifices being filled at first with pus, for the small hairs have usually fallen out.

There are also numerous unruptured superficial pustules. The orifices enlarge to the size of a hemp seed, and pus exudes on pressure.

* *Annales de Derm. et de Syph.*, vol. v. (1884), p. 437, with plates.

In a still further stage, a phlegmonous condition supervenes, the whole fluctuates to some extent, and often sanious pus can be pressed out, and its resemblance to kerion is obvious.

There is some itching and heat, but no pain or enlargement of the neighbouring glands as a rule. Its development is acute, and it may reach its acme in a week, and when it heals under treatment seldom leaves any permanent scar. It generally occurs in those who have to do with animals, especially calves, such as butchers and drovers.*

The treatment is the same as for kerion. Press out the pus, and if any of the holes are large enough, syringe out with carbolic acid lotion one in forty, and rub in an ointment of sulphur. ʒj, acidi carbolici ʒss, adipis ʒj.

Impetigo contagiosa may supervene as a complication either from scratching or from injudicious, irritating treatment in the spreading stage, setting up eczematous inflammation, and then the pus may accidentally become inoculable. If the impetigo contagiosa is not arrested at once, the pus spreads the ringworm in the most disastrous way over the scalp. This is what Aldersmith calls "recent pustular ringworm," and is quite distinct from kerion.

A. Giletti † has described a case of primitive trychophytiasis of the mouth. It affected the lips, buccal mucous membrane, and tongue, and clinically closely resembled lichen planus of the mouth. He refers to Robinson and Cutler's case, shown to the New York Dermatological Society.

Etiology.—Ringworm is indisputably contagious and propagated by the transference of the fungus elements to the scalp or body, either directly from child to child, or through the medium of brush or comb or other contaminated article that the diseased and the healthy child have come in contact with. The horse, dog, cat, cow, pig, sheep, rabbit, and even birds, are also liable to it, and

* In the case of a packer observed by Pernet in my clinic, (*Brit. Jour. Derm.*, vol. xii. (1900), p. 415, and vol. xiii. (1901), p. 98), the agminated folliculitis of the forearm was thought by the patient to have been due to unpacking Japanese goods. Several fellow-packers had been attacked in the same way. Cultivations of the fungus showed it to be trichophyton meg. ectothrix. There were no other pustular lesions anywhere, and the culture was pure from the first, showing the pyogenic nature of the fungus. Pernet could not find fungus in the reeds used by the Japanese for packing.

† Turin, 1895, published by Fodratti and E. Lecco.

have transmitted it to man, and *vice versâ*, but the body is more often affected than the head from this source. It is possible that, where many affected children are congregated together, the fungus may be conveyed by the air alone.

There is but little difference in the liability of the two sexes. In six hundred cases of the scalp, there were about 6 per cent. more boys. With regard to age, the youngest cases I have met with were nine days for the disease on the scalp and one week for the body; in the other direction, practically the liability to *tinea tonsurans* ceases about the age of puberty, and it is much more amenable to treatment in children of thirteen or fourteen.

This limit is more definite for *microsporon* than for *megalosporon*. Although I have seen a good many cases in which *microsporon* has begun between fourteen and fifteen years, it is certainly uncommon, and I can recall only one case commencing as late as nineteen. It is probable, however, that in neglected cases it persists indefinitely.

The two following examples of persistence may have been really *megalosporon* cases, as they came under my notice in the 1880 decade; but even if they were, they would be noteworthy, as Sabouraud says, the large are not so persistent as the small spored cases.

In a woman of twenty the disease had existed from the age of ten years, and it was in the disseminated form all over the head.

In a lady, *æt.* eighteen, it had been present ever since she was four years old, in the form of several small foci of diseased stumps scattered about. She had had much skilled treatment, but it had probably been intermittent. I saw her at long intervals for three years, and she was not, therefore, cured until she was twenty-one.

I have several times seen ringworm commence in the nape and extend into the scalp of an adult, but without producing any apparent change in the nutrition of the hair, but whether large or small spored I am unable to say. No case, definitely proved to be *microsporon tinea tonsurans*, has been recorded as commencing in adults, my own case of nineteen years being the oldest so far.

On the other hand, large-spored ringworm commencing on adult heads, although rare, has been repeatedly recorded by

numerous observers. It is generally of the peladoid form due to megalosporon endothrix. I can only recall three cases in my own practice, one æt. thirty-four, another fifty-three, and the third fifty-five.* On the other hand, tinea circinata, both micro- and megalosporon, may occur at any age, but it is uncommon after fifty, and is then usually ectothrix.

Malcolm Morris advanced the opinion that tinea tonsurans was more common and obstinate in fair-haired children. It is undoubtedly more common in fair children, but simply because fair children predominate in this country. In investigating this point, the colour of the hair and eyes was noticed in five hundred children, taken consecutively at the East London Hospital for Children; then a record was kept of the same points in four hundred cases of ringworm, taking golden-haired, light brown, and the few red-haired children together as fair, and the rest as dark; it was found that there were 82·4 per cent. fair, and 17·6 per cent. dark, while in ringworm there were 82·6 per cent. fair and 17·4 per cent. dark—a curiously identical proportion. I have not been able to observe that the disease is more obstinate in fair children than dark, but Leslie Roberts says that pigmented hairs resist the keratolytic action of the fungus better than unpigmented hair, which would lend some support to the theory.

There is no known constitutional or other condition of the patient to be made out that predisposes to ringworm, though there is no doubt that some people are more susceptible than others, *i.e.*, that their skin or hair follicles offer some special advantages for the cultivation of the fungus. No doubt, too, it flourishes more readily in badly nourished children; but, on the other hand, I have met with it in an extremely developed and obstinate form in perfectly healthy children, both fair and dark; so that, while it is always right to attend to any defect of the general health, I could never convince myself that the progress of the disease was materially influenced by such measures, and Tilbury Fox's dictum that children with ringworm dislike fat, and similar statements, are, I believe, fallacious.

The reason that ordinary or microsporon ringworm of the scalp does not occur in adults, and that the bald form of ringworm is seen in a certain number of children, is, I believe, due to the greater resistance of the hair to the invasion of the fungus in adults;

* In this case Pernet found endothrix by the microscope and by culture.

and in some dark-haired children and others, so that, while the fungus may pass down into the follicle and interfere with the nutrition of the hair, it does not penetrate the shaft. The way in which the fungus attacks the hair, whether through the cortex, as microsporon most frequently does, or round by the root and then upwards in the shaft, as in megalosporon, may account for the occasional appearance of the large-spored ringworm in adults. That it is not merely a question of age is shown by the fact that megalosporon ectothrix ringworm attacks the beard, and there the fungus often penetrates into the hair shaft, although it is in the main outside.

Diagnosis.—There are few diseases of the skin in which errors of diagnosis are so frequently made as in ringworm of the scalp. Such errors are often most serious in their results to a school or other community of children, and bring, therefore, the practitioner into disrepute. To avoid this, it is necessary not only to know the aspect of typical cases—which, indeed, the laity themselves can often recognise—but the variations already enumerated. It is also necessary to remember that the amount of inflammation excited by the fungus is very variable and may mask the primary condition, and that familiarity with the diseased stumps, under all conditions, is an indispensable requirement. In a few doubtful cases, the skilful use of the microscope can alone decide the question, though if all the points to be described be borne in mind, this will rarely be absolutely necessary, except to settle whether a case is really cured.

In an ordinary way it may be said, that loss of hair on scaly patches in the scalp of a child means ringworm, and close inspection with a lens in such a case will almost invariably detect the characteristic, browsed-off stumps of hair, bent, broken, twisted, and sticking out in all directions, or with the appearance described as occurring sometimes in fair-haired children, under Microsporon Ringworm.

The main naked eye distinctions between microsporon ringworm and megalosporon ringworm are, in the case of the latter, the much smaller number of stumps, many of them broken off level with the skin; the scantiness or even absence of scales, so that alopecia areata may be simulated; and the outline is often less markedly circular and well-defined, and there may be some unaffected hairs in the diseased area. The distinction between

the different forms of megalosporon is of merely academic interest, and can seldom be made without microscopical, and often cultural, investigations.

The following differential features refer to microsporon ringworm only.

The diseases which most closely resemble it are dry seborrhœa of the scalp and psoriasis.

In *seborrhœa*, the scaliness is diffuse, and never in sharply circumscribed patches, and though there may be some slight loss of hair, it is in the form of general thinning, and there are never any broken-off stumps; moreover, in children, simply scurfy seborrhœa is not so common as in later life, while ringworm is practically limited to childhood.

Psoriasis sometimes offers more difficulties. Of course, if it is present in its usual situations, on the elbows and knees, or elsewhere on the body, no difficulty ought to arise; but the patient's friends do not always spontaneously inform the doctor of this, and in a few instances, psoriasis is confined to the scalp, at all events for some time. The patches are circumscribed and scaly, but the scales are more abundant than in ringworm, often forming crusts; moreover, loss of hair is the exception, not the rule, in psoriasis, and there are never any stumps, but great care is required in order to be sure of their absence in fair, fine-haired children.

Eczema cannot be confused with typical cases, but sometimes either from scratching or from irritant applications, ringworm may present some eczematous characters, and the ringworm may be thought to be eczema only. The loss of hair, the circumscribed scattered patches, which are unusual in eczema, ought to excite suspicion, and close examination will then detect the short hairs of ringworm.

The distinction of kerion from *carbuncle* has already been alluded to; and from *impetigo contagiosa*, even when combined with ringworm, it may be distinguished by kerion being raised and sharply defined, and the pustules are always seated round the hairs. In any doubtful case, the microscope should be repeatedly used.

Prognosis.—Although every case is curable, it is very difficult to give a correct answer to the anxious question, "When will it be well?" In a very recent case, six weeks to three months

would be a reasonable time for a cure, though even then it is not certain. For many chronic cases, six months is a short and twelve months a fair time, but some cases take longer even in the most experienced and skilful hands, and a large proportion of the cases reported as cured in a month or six weeks are only examples of unskilled observation.

Sabouraud and some of his followers state that the megalo-sporons are more amenable to treatment than the microsporons. This may be true as a general statement, but its value is largely discounted by the fact that many of the most obstinate cases I have had to deal with have been large-spored, and Aldersmith and others have had a similar experience.

Treatment.—The theory of this is simple, viz., to destroy the fungus which is the cause of the disease; but, though parasiticides are numerous and sufficiently powerful, it is found in practice that while the cure of this disease is very easy, as a rule, when the disease is only on the body, where it can be easily got at, it is very difficult to cure on the scalp, where the problem is how to get the parasiticide deep enough to reach the fungus, which often grows down to the very bottom of the follicle.

Tinea circinata is generally curable in a week or two by almost any of the recognised parasiticides. The scales should be removed (unless the eruption is on the face) by means of soft soap and a piece of wet flannel, and the patch, if in a covered part, painted with tincture of iodine, or acetic acid, or sulphurous acid; or hyposulphite of soda $\mathfrak{z}\text{ij}$ to $\mathfrak{z}\text{j}$ of water may be applied on lint covered with oiled silk; an improvement on this is to soak the skin first with the hyposulphite of soda solution $\mathfrak{z}\text{ss}$ to $\mathfrak{z}\text{j}$, and then with a tartaric acid solution gr. xv to $\mathfrak{z}\text{j}$. The result is the development of nascent sulphur and sulphurous acid on the skin itself, and in it, according to the degree of soaking with the lotions. Or one of the following ointments may be rubbed in three times a day—sulph. sublim. $\mathfrak{z}\text{ss}$, acidi carbolicī $\mathfrak{m}\text{xx}$, lanolini $\mathfrak{z}\text{vj}$, ol. olivæ $\mathfrak{z}\text{ij}$; cupri oleatis $\mathfrak{z}\text{ss}$, lanolini $\bar{\text{c}}$ oleo $\mathfrak{z}\text{j}$; hyd. ox. flav. $\mathfrak{z}\text{j}$, lanolini $\bar{\text{c}}$ oleo $\mathfrak{z}\text{j}$. In an infant, very weak preparations are sufficient, such as ung. hyd. nit. dil., or hyd. ammon. $\mathfrak{z}\text{ss}$, to $\mathfrak{z}\text{j}$ of lanolin or lard.

On the other hand, in so-called *eczema marginatum*, especially when contracted in tropical climates, very powerful and penetrating parasiticides are required in some cases, though there is no harm

in trying milder preparations at first. After thorough washing with soft soap, the nascent sulphur treatment just described should be thoroughly applied under oiled silk. In tropical and more obstinate cases, Goa powder, or its active principle, chrysarobin, is one of the most actively effectual remedies; it may be used as an ointment—chrysarobin gr. x to ʒss, lanolin ʒiij, adip. ʒv; or a piece of flannel moistened with strong acetic acid may be dipped into Goa powder and well rubbed on; or half a lemon may be dipped into the powder and used in the same way.

The disagreeable effects detailed while describing the use of this drug in psoriasis may ensue, and patients should be warned of this possibility, and the remedy should not be resorted to, therefore, until milder measures have failed, such as oleate of mercury, oleate of copper, and many other remedies mentioned in the treatment of scalp ringworm; but in all cases, a perfect cure should not be hastily inferred from the absence of diseased appearances, as some living spores may remain in the epidermis ready to spring into activity as soon as parasiticide remedies have been discontinued, or when the weather or climate is warmer, to the disappointment of both patient and doctor; every case, therefore, ought to be carefully watched for some time, and the slightest return immediately and vigorously treated. R. W. Taylor recommends hyd. perchlor. gr. 2, tinct. benz. co. ʒj, to be painted on daily.

The treatment of *tinea tonsurans* remains the opprobrium of the dermatologist's art, from the difficulty experienced in carrying the parasiticide deeply enough into the follicle. As in all obstinate diseases, a legion of remedies are put forth as certain and speedy cures. I know of only one certain remedy, namely, *perseverance*. The most common source of failure is intermittent treatment; the friends relaxing their efforts, or feebly trying all the so-called cures recommended to them by their friends. There is no case which cannot be cured, though too often success is only attained after a long course of treatment, and it may happen that when success is in sight, the patient is taken off to some one else, who reaps the fruits of many months of labour, and gets all the credit. The consolation lies in the truth of the proverb, "Hodie tibi, cras mihi."

It will serve no good purpose to enumerate all the plans of

treatment which have been brought forward even in the last ten years; a sketch will first be given of the general means to adopt for the cure of the disease, and for the prevention of its spread, either on the patient himself or to others, and then my own experience will be related of the most highly advocated remedies or methods of treatment.

The first thing to do, is to cut the hair as closely as possible for at least an inch all round the patch, or if there are more than one or two patches, it is better to remove the whole of the hair, leaving at the most a fringe all round, which, coming below the hat or cap, conceals the tonsure and prevents the patient from attracting too much attention. Whether the hair should be cut as closely as scissors can cut it, or shaved, is immaterial, but cutting is more convenient, especially as the process has to be repeated every few days. If shaving be employed, Calvert's carbolised soap should be used, and the brush cleansed with carbolic lotion, 1 in 20, otherwise the shaving brush may disseminate the disease, or a fresh pad of absorbent wool can be used each time, instead of a brush. The object of removing the hair is twofold: it enables the diseased area to be more easily got at, and also any fresh focus of infection can be at once detected, when prompt treatment may effect a speedy cure, for when the hair is long, the early lesions often remain undiscovered until the fungus has got deeply into the follicle, and is difficult to reach.

The parasiticide should be applied, not only on, but round the patch, and great care must be taken to get it into the tissues as deeply as possible. If it is a lotion, it should be dabbed on or brushed in, for some minutes; if an ointment or oily fluid, it should be well rubbed in, at least twice a day. With regard to washing, some difference of opinion has been expressed. Aldersmith and Malcolm Morris consider that when ointments are used washing should be done not more than once a week, as it removes the ointment and prevents it penetrating so deeply. The chief objection in my opinion is, that if care be not exercised in drying the head, the disease may be transferred by the towel from one part of the head to another. The head should be dried, therefore, by pressure, and not rubbing with the towel. Thymol or other parasiticide soaps have a slight advantage as detergents. Morris recommends cleansing with spirit and

æther to dissolve fatty substances and dehydrate the tissues, and thinks that water favours the development and spread of the fungus.

When the child is old enough—that is, over six years—epilation is a valuable adjunct ; it should not be done until after treatment has been employed either to loosen the hairs or to deaden sensibility. The latter may be effected by glycerine of carbolic acid, or cocaine 10 per cent. in lanolin, the hairs may be loosened generally by oleate of copper, or soaking with solution of salicylic gr. v in æther ℥j, and other means to be enumerated. The epilation should be performed systematically ; a square quarter of an inch or more should be cleared each day, according to the child's endurance.

When the child is eleven or twelve, and the part has been thoroughly numbed, Duckworth's large epilation forceps may be used at first, and a considerable area quickly cleared. Large numbers of hairs break off doubtless, but many are removed ; the process is painful, and this plan is therefore only suitable for a small number of cases. When the hairs that have been broken have grown up again, they must be attacked individually with a finer pair of forceps, and pulled out carefully in the direction of their set ; with care, vast numbers of hairs may be removed, but there will always be some too brittle for this plan to be completely efficacious. The parasiticide should always be applied immediately after epilation. When the child is young or nervous, this valuable adjunct has to be dispensed with.

To prevent the disease spreading on the child itself, all scales should be removed by soft soap, preferably carbolised, and the head should not be brushed, as that sows the spores broadcast over the scalp ; on the whole, too, oily preparations are preferable to watery ones, to prevent the spores being carried from one part of the head to another, or from contaminating the atmosphere ; for this purpose, carbolised oil one in twenty should be rubbed over the whole of the scalp, while the stronger application is used for the patches themselves. The lining of all hats and caps that have been worn should be taken out and burned, and tissue paper put in their place, and this can be thrown away daily ; the caps or hats themselves should be renewed at least every month, while the stuff caps which have to be worn continually, should be thrown away even more frequently. The child should be isolated from

others as far as possible, but where this is impossible, the patient must constantly wear a light cap of some kind lined with tissue or oiled paper, which must be changed daily, and no close contact with other children allowed. The healthy children's heads should be washed two or three times a week, and of course the diseased and healthy should not be allowed to use the same comb, brushes, or towels. When these measures have been rigidly carried out, I have never known the disease spread to others, even when they have lived in the same room. The parasiticide applications, and the best means of making them penetrate sufficiently deeply, remain to be considered.

The introduction of lanolin as a basis instead of lard or petroleum fats is an improvement for ointments, but it is too sticky by itself, and it is better, therefore, to add a fourth part of olive, almond, or heavy paraffin oil, or to combine it with lard as $\mathfrak{z}\text{v}$ to lanolin $\mathfrak{z}\text{ij}$. The base I use most is lanolin $\mathfrak{z}\text{v}$, parolein (a heavy paraffin oil) $\mathfrak{z}\text{ij}$. This mixture of oil and lanolin is therefore intended to make up the ounce in all the formulæ of parasiticide ointments; other solvents, each advocated by its author as *the plan*, have also been suggested, and are of certain utility, but fall far short of infallibility.

These solvents are—chloroform, æther, benzol, turpentine, potash, and soft soap; in one of these menstrua, the parasiticide is dissolved, and applied in the manner considered most suitable; all are successful in some cases, none are so in all, and unfortunately, we have no data on which we can rely, which enable us to predict whether any particular remedy will or will not succeed. One great source of fallacy is this, that when the disease is recent, most of the proposed methods are successful, and likewise when the case has been worried at for months with various parasiticides, and then goes to a fresh doctor, his favourite formula will probably score another success, and impress his mind with its wonderful efficacy. Not a few old women's and barbers' nostrums have obtained their reputation in this way, but their failures are never recorded. Pessimistic as these statements appear, they are intended not to discourage the practitioner, but to point out that the road to success is to be sought, not in this or that formula, but in perseverance with the various measures indicated, coupled with the employment of parasiticides, which are not to be hastily changed if there is any progress at all, such

progress being looked for month by month rather than week by week. For some years past I have endeavoured to test almost every method advocated by any one of reputation, or in which the method itself offered anything like a chance of success. Twenty or thirty consecutive cases have been put on the treatment for at least three months, and then an endeavour made to form an opinion of its merits; the matter, however, is too complicated to allow of anything more than a statement of the impression made on my mind by it, but where good authorities have come to a different conclusion their views will be stated. The ground will be cleared by first describing the treatment that will suit simple cases.

In infants of a few weeks or months old the disease is almost as easily cured as tinea circinata; a good formula is sulphur $\mathfrak{z}\mathfrak{j}$, acid carbohc $\mathfrak{z}\mathfrak{ss}$, lanolin $\bar{\mathfrak{c}}$ oleo $\mathfrak{z}\mathfrak{j}$, or ung. hyd. oxid. flav. $\mathfrak{z}\mathfrak{j}$ to $\mathfrak{z}\mathfrak{j}$; the sulphurous acid or hyposulphite of soda lotions previously mentioned, if continuously applied, or almost any of the remedies to be presently described, diluted according to the age of the patient, will effect a cure, remembering always to keep on the safe side, as the skin of young infants is easily excited to intense suppurative inflammation. If one of these parasticides is rubbed in night and morning, or if lotions are applied continuously under oiled silk, success will generally follow in a month or two, or even less; if the child is under twelve months, epilation is unnecessary, and, indeed, impossible. In older children, in recent cases, one of the best applications to cut short the disease is Coster's paint (iodine $\mathfrak{z}\mathfrak{ij}$, light oil of wood tar $\mathfrak{z}\mathfrak{vj}$, the bottle to be shaken before using). It should be firmly applied with a stiff brush; a black crust forms after two or three days, and this should be removed with the forceps, not waiting until it shells off of itself; the part is then to be well rubbed with soft soap and flannel, and the paint again applied. Two or three applications are almost infallible before the hairs are visibly affected, and even after this it is a very useful remedy, but not suitable for children under four years old. Aldersmith prefers oil of cade, and Morratt Baker creasote, to the light oil of wood tar; they are all equally efficacious, but the oil of cade preparation has the advantage of being thicker. I attach great importance to tearing off the crust, as it brings with it more fungus and diseased hairs than if it is allowed to separate spontaneously. For recent

cases, blistering is also useful, either with liquor epispasticus, or glacial acetic acid, or, as Aldersmith suggested, the last with the addition of hyd. perchlor. gr. 4 to the ounce. These powerful applications should not be used on strumous children, nor on those under six years old, and it is always wise to do a very small area at a time, as it is never quite certain how much inflammation will be excited, and a permanently bald patch is a perpetual memorial to the imprudence of the practitioner. This caution is applicable to all strong remedies, which should never be used without preliminary investigation of the child's susceptibility. The crust formed by the acetic acid should be removed in two or three days with forceps, and weak parasitocides used for a week before again applying the acetic acid; this plan may be used at intervals during the course of other treatment, but as it is painful it has a very limited application. Formalin is one of the remedies put forward as effecting a certain cure in a few weeks, in which the above caution is needed. I have seen severe scarring produced by its injudicious use. If used at all, a dilution of one of the usual strength to ten of water should be applied and the strength gradually increased. A. Salter, its greatest advocate, used the usual forty per cent. solution, and claimed for it more good and less evil than Aldersmith, Morris, and others could get, and it is very painful. A remedy that I regard as most valuable before epilating, and for a large proportion of cases of all kinds, is oleate of copper, of which Shoemaker and Le Sieur Weir were the earliest and strongest advocates; as a rule, a drachm of the pure oleate to one ounce, in the form of ointment, is most generally useful; and where the patient is tolerant, the strength may be gradually increased up to $\mathfrak{z}\text{iv}$ to the ounce; and I have used equal parts. In many cases, under its use the diseased hairs drop out, and leave the part bald and smooth; and even where this is not the case, epilation is generally much facilitated, the majority of the hairs coming out entire and with little pain. In a large number of cases, a thorough and satisfactory cure may be effected by its persevering employment, but, like everything else, it fails completely in some cases.

Occasionally a mild kerion is produced by it which is advantageous, but it cannot be produced at will. I often add 10 to 20 grs. of chrysarobin to the $\mathfrak{z}\text{j}$ of ointment. It increases its efficacy, but has the usual drawbacks of dyeing the hair, exciting

erythema, etc. Five per cent. of pure mercuric oleate is sometimes added with advantage, and some, like Aldersmith, advocate stronger proportions up to 33 per cent. of mercuric oleate alone. It should not be used over a very large area for fear of mercurialisation.

Chrysarobin has also been used in many combinations. Hutchinson's formula is chrysarobin $\mathfrak{z}\mathfrak{j}$, hydrarg. ammon. gr. xx, liq. carbonis deterg. $\mathfrak{m}\mathfrak{x}$, lanolin $\mathfrak{z}\mathfrak{j}$, adipis recent. $\mathfrak{z}\mathfrak{v}\mathfrak{j}$. Unna's formula is chrysarobin 5 parts, salicylic acid 2 parts, ichthyol 5 parts, vaseline 88 parts, rubbed in vigorously twice a day, and covered with gutta-percha tissue, and the adjacent more hairy parts covered with a zinc-gelatine paste. He claims to get a cure in a month, but his are mostly large-spored cases. The treatment is too severe unless it can be carried out under the closest supervision, and is not suited to out-patient practice in my experience.

Morris rubs in chrysarobin ointment (presumably the B.P., 20 grs. to the oz.) daily for ten minutes, until a red halo is visible, then applies a boric acid or other mild ointment until the redness has disappeared, and then resumes the chrysarobin until the inflammation has again appeared, which takes longer than at first. After three such cycles, if marked improvement has not occurred, he tries sulphur, mercury, or iodine. Duhring also advocates chrysarobin. At one time I used it extensively, but gave it up on account of the frequency of the erythema, swelling, and conjunctivitis produced, as well as the yellow staining (turning an indelible purple after washing) of linen and the hair, while the results were not striking enough to compensate. As, however, its penetration is undoubted, I have tried to get the good without the evil, and have succeeded fairly by not using more than 20 grs. to the oz., by not using it over very large areas at a time, and by not using it on the anterior portion of the scalp, so as not to excite conjunctivitis; and not to use soap, so that the staining is yellow instead of purple.

In combination with oleate of copper, I have sometimes traced the staining of the diseased stump almost to the end of the root.

As the main aim is to produce penetration of the parasiticide, I have devised the following plan. Two solutions are prepared. No. 1, is pot. iodatis $\mathfrak{z}\mathfrak{i}\mathfrak{j}$, acid. acetici fort. $\mathfrak{z}\mathfrak{i}\mathfrak{j}$, aq. destil. $\mathfrak{z}\mathfrak{i}\mathfrak{v}$. No. 2, is pot. iodidi $\mathfrak{z}\mathfrak{i}\mathfrak{j}$, aq. destil. $\mathfrak{z}\mathfrak{i}\mathfrak{v}$.

The affected part of the scalp must be shaved (clipping is not sufficient) once a week. The scalp is then soaked with No. 1 solution with a pledget of lint dabbed on for three or four minutes, then while still wet No. 2 is similarly applied. The result is the formation of nascent iodine in the skin. Pernet has several times found iodine staining at the bottom of the hair root. When the epidermis begins to loosen, the process of separation should be accelerated with forceps and the treatment renewed. Great improvement results in most cases, in some it has failed, possibly from imperfect application. In a few also, it was found to be painful, for, as is well known, some people are very sensitive to iodine applications, while others bear them without inconvenience.

Jamieson recommends the following mode of treating ringworm of the scalp:—

(1) Keep the hair shaved or close cut during the entire period of treatment. (2) Keep the scalp clean by washing vigorously twice daily with a fluid superfatted potash soap. (3) The most efficacious application he has found to be precipitated sulphur, $\mathfrak{z}\mathfrak{j}$; salicylic acid, β -naphthol, and ammoniated mercury, each gr. x; and lanolin, $\mathfrak{z}\mathfrak{j}$. This ointment is to be rubbed in for ten minutes slowly and carefully twice a day.

Another good plan, but more frequently painful than the nascent iodine, is to soak the skin first with acetic acid solution $\mathfrak{z}\mathfrak{i}\mathfrak{j}$ to $\mathfrak{z}\mathfrak{i}\mathfrak{v}$ of water, and then paint on tincture of iodine.

Salicylic acid is another drug, with many friends, either as an ointment $\mathfrak{z}\mathfrak{j}$ or $\mathfrak{z}\mathfrak{i}\mathfrak{j}$ to $\mathfrak{z}\mathfrak{j}$, or as a lotion gr. 20 to 60 to the $\mathfrak{z}\mathfrak{j}$ of spirit, æther, or chloroform; both are remedies of some value. I have also tried salicylic acid plaster, which is useful in some cases, and facilitates epilation. After many trials, the following method has been more successful in my hands than any other. The head is shaved, not clipped, over the affected region, and for at least three-quarters of an inch beyond the patch. Then salicylic collodion (consisting of salicylic acid gr. 10, collodion $\mathfrak{z}\mathfrak{j}$) is painted daily for a week, on and beyond the patch. At the end of a week, the thick skin formed by the collodion is lifted off by insinuating one blade of the epilation forceps under the skin, and gradually lifting up a portion. This is repeated in various directions until the skin is cleared off, and then the scalp is again shaved, and the salicylic collodion reapplied for another week. The advantages are, that with this artificial skin on, the patient is no longer a source of

infection, the air is excluded, and as the fungus is aerobic, its development is hindered. The salicylic acid loosens the epidermis, and also the hairs, so that when the collodion is lifted off, enormous numbers of stumps can be seen to be adhering to the under surface, and the diseased area is eventually cleared of them. The disadvantage is that the removal of the collodion is somewhat painful, so that it is inapplicable to very young children, but there are few over seven years of age for whom it cannot be used. If the skin is very adherent at the end of a week, a day or two longer may be given; if any excoriation is accidentally produced, boric ointment should be applied until the skin is sound before renewing the collodion.

The principle of excluding air is one extensively adopted since Vidal showed that the fungus is aerobic. Vidal himself cleaned the head with turpentine, then painted on tincture of iodine, and next smeared on iodised vaseline, and covered it with laminated gutta-percha. Besnier directs the following: epilate all round the patch, curette off the scales and stumps, wash it with alcohol with five per cent. chloroform and one per cent. boric acid, again curette and epilate, then dab it with a perchloride of mercury solution gr. $\frac{1}{2}$ to the \mathfrak{z} j and five grains of glacial acetic acid, and finally seal it over with emplastrum Vigo.

For a limited class of cases, croton oil is recommended by Cottle, Aldersmith, and others, and is a most valuable and certain remedy for suitable cases, such as chronic ones of limited area, and for the isolated and small groups of diseased hairs in disseminated ringworm; indeed, for the last form it is often almost the only resort left, and will cure the most obstinate cases. A drop of the pure oil is put into the mouth of each follicle by means of a needle, preferably a fine crochet needle; or, if there are a large number of diseased hairs, a fine hypodermic syringe may be used. In twenty-four hours, a pustule is formed round the hair, which can be removed entire—an impossibility without some such loosening process, as the hairs are so permeated with fungus as to be utterly rotten, and break off within their follicle. The hair is not restored, but the loss is not perceptible when the hair grows round it, unless several hairs close together are destroyed. Electrolysis will also effect the same end, but it is a tedious process for the operator, and will rarely be borne by children under twelve years old, or even older. Croton oil should never be used

for strumous children, or for any who are less than six years old, and should be applied very cautiously at first, and never for more than a square half-inch at a time. In a limited patch, where it is necessary to cure in a short time—*e.g.*, to prevent the loss of a presentation to a public school—the quickest way is to produce a mild pustular folliculitis or artificial kerion; and the loosened hairs can then be easily removed. To do this, a liniment of one part of croton oil to three of olive oil may be rubbed in, and if this fails to produce pustulation, the strength may be gradually increased until the desired effect is reached, the pure oil being sometimes required. If well managed, the hair is sure to grow over the diseased part, taking a long or short time according to the severity of the inflammation excited. Feulard utterly condemned croton oil, and says epilation should be employed instead; but it is only as a necessary preliminary to epilation that it should be used. In disseminated ringworm, the hairs are so permeated by the fungus that they break off with very slight traction, unless they are previously loosened by suppuration or electrolysis. When, in the treatment of ringworm, either from the sensitiveness of the child or from using too strong a preparation, a serous or pustular dermatitis is produced, the contagium of impetigo contagiosa may be deposited, and the condition called by Aldersmith impetiginous ringworm set up. In the simple inflammation, boric acid ointment \mathfrak{zj} to the $\mathfrak{3j}$ will soon repair the damage, but the treatment must be prompt, or the secretion in a recent case will rapidly spread the infection to the neighbouring parts. In the impetiginous condition, the disease should be treated as if it were a simple impetigo contagiosa; the crust must be softened with carbolised oil and removed, and the diseased area kept well covered with the ammoniated mercury ointment. The impetigo part will soon be cured, and the ringworm must then be attacked with the ordinary remedies, but of a weaker character.

Kerion, to a great extent, cures itself, and most authors suggest very mild measures, such as lead, watery boric acid lotion, equal parts of sulphurous acid and water, hyposulphite of soda lotion, or boro-glyceride, one to two of water, applied on lint under oiled silk; but I prefer sulphur \mathfrak{zj} , acid carbohc $\mathfrak{3ss}$, adipis $\mathfrak{3j}$, removing the loose hairs, and I have had such uniformly good results that I never use anything else. However much kerion tumours fluctuate and appear inflamed, they never require incision; the dilated

follicles, after removing the hairs, always allow sufficient exit for the fluid, which is more glairy than purulent. The process should be brought to an end as soon as possible, as, although self-curative, it is often at the expense of the life of the follicle, and permanent baldness results.

The question arises, How should progress be judged of? The only real criterion is a diminution of the number of diseased stumps, and no case is safe until they have completely disappeared. The uniform growth of fine downy hair over the denuded patch, which develops into strong, healthy hair, subsequently takes place; but, even though the new hair may have apparently grown all over the patch, the cure must not be assumed unless careful and repeated search has failed to find a single diseased stump, and where there is any doubt as to their condition, the microscope must be employed. Persistent scaliness is often regarded as only a sequela of ringworm, and practitioners sometimes write to the journals, saying that they have cured the ringworm; but how can they get rid of the scaliness? This is an error; persistent scaliness in patches, always means that the disease is not yet cured, and careful search with a lens will always establish the presence of diseased hairs. Even when repeated and skilled search has failed to find such stumps, and the hair has grown evenly all over the patch, and there is no longer scaliness, there is one precaution which, if omitted, may lead to disappointment, viz., that after apparent cure a weak parasiticide, such as hyd. perchlor. gr. 3 to lanolin c̄ oleo ʒj, should be rubbed in two or three times a week for two or three months. For this reason children should not be sent back to school as soon as they appear well, as the bi-weekly treatment is scarcely ever carried out there, and it is very difficult to convince parents even, of the value and necessity of this extra precaution.

Onychomycosis. For the treatment of ringworm of the nails, one of the many proposed plans is to scrape the affected nail thoroughly, and then apply sulphurous acid or the hyposulphite of soda ʒij to the ounce of water, on lint covered with oiled silk. This plan is good, but the best in my hands has been the treatment recommended by Harrison of Bristol for tinea tonsurans. Two solutions are prepared. No. 1 consists of liquor, potassæ and aquæ destillatæ āā ʒss, pot. iodid. ʒss; No. 2 solution consists

of hyd. perchlor. gr. 4, spir. vini rect., aq. dest. āā ʒss. The affected nail should be well scraped, then No. 1 solution applied on lint under oiled silk for fifteen minutes; then No. 2 solution is to be immediately applied on lint under oiled silk for twenty-four hours, when the nail is again to be scraped, washed, and the process repeated. In this way, I have obtained cures in cases of very long standing. When the skin begins to peel, and the finger becomes tender, hyposulphite of soda ʒj ad aq. ʒviij may be used until the skin has become thicker again. The same treatment for the scalp requires great care. I have seen most disastrous sloughing from its careless application. It must be remembered, as No. 1 solution evaporates, the caustic potash is becoming stronger every minute, and a powerful caustic solution is produced. Unless, therefore, the medical man can superintend the treatment himself, it is better not to trust such a potent remedy in inexperienced hands. But for the nails it is most satisfactory.

The nascent iodine treatment as described under *Tinea Tonsurans* is very efficacious, and less likely to make the finger sore, but stains the nails. Sabouraud's treatment is to apply constantly a pad of absorbent cotton soaked in a solution of iodine and covered with an indiarubber finger stall. The solution consists of iodine 1 gramme, iodide of potassium 2 grammes, distilled water 1 litre.

TINEA CIRCINATA.*

Synonyms.—Herpes circinatus; Ringworm of the body; *Fr.* Herpès circiné; Trichophytie circinée.

This is a very common form of the affection, either alone or in combination with one or other variety. In my clinic, it occurs alone in two per cent. of all cases of skin disease, and there are many more associated with *tinea tonsurans*.

It may be caused by the microsporon or the megalosporon, and as far as my clinic is concerned, Pernet found that in children the large and small spored cases were in about equal numbers, while Sabouraud's statement, that *tinea circinata* was nearly always due to megalosporon, was only true for adults.

* Author's Atlas, plate xliv. Fig. 1 with concentric rings is probably microsporon. Figs. 2 and 3 are megalosporon, and so probably is fig. 4.

Inasmuch as microsporon of the scalp is as ten to one of megalosporon, as is natural, where both the scalp and skin were involved the absolute majority were due to microsporon.

Taking, therefore, all cases on the glabrous skin, whether with or without ringworm elsewhere, the most common form of tinea circinata in this country is due to microsporon, and, as a whole, the inflammatory phenomena are of slight degree.

The Microsporon form may occur in rings or solid patches. The ring begins as a small, pale red, circular, well-defined, slightly raised spot, which soon becomes scaly and spreads peripherally,

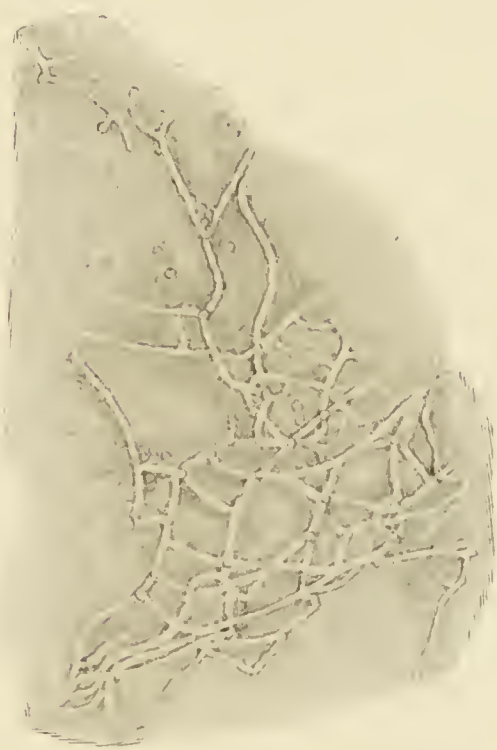


Fig. 91.—Tinea Circinata (Microsporon). Zeiss D.D. 10 in. tube, and reduced $\frac{1}{6}$.

clearing up *pari passu* in the centre, thus forming a ring, the raised border of which is usually papular and slightly scaly. The ring continues to increase in diameter, but without thickening of the border, until it has attained to the size of a shilling to a crown-piece, and when it has attained to its full size either remains stationary, or, the process of involution outstepping that of evolution, the ring thins, then gets broken, and finally the fragments also disappear, and the process is thus spontaneously terminated as far as that ring is concerned. It is common, however, for other rings to form; and if they are near each other, they coalesce, the rings being broken at their point of contact, and a gyrate figure is produced, enclosing sometimes a very large

area. There is no attempt at symmetry or any regular arrangement of the rings, but they are more common on exposed parts, such as the face, neck, back of the hands, etc. There may be slight itching or no subjective symptoms at all, and the duration may be days, weeks, or months, when untreated.

The solid patch is pale red, brannily scaly, and enlarges peripherally, but does not clear up in the centre. Usually circular and well-defined, it seldom attains to more than one inch across; it is sometimes irregularly shaped, and the parasitic nature may not be suspected unless more typical lesions are present. The border, however, is always well defined, and the small number and usually unilateral distribution should suggest microscopic examination.

Sabouraud at first said that microsporon on the glabrous skin only caused scurfy spots without redness; but he has modified his views since, and in my experience these are less common than the above description of cases, and very decided inflammation occurs sometimes.

A woman whose child had typical microsporon ringworm on the scalp, came to University College Hospital with three half-inch solid patches, very distinctly raised, bright red and scaly in the centre, simulating psoriasis with the crust rubbed off; Pernet found the microsporon fungus. In another microsporon case with rings, he traced it to a kitten.

Concentric Rings. This is rather a rare variation. Unna* records a case of three, and Arning† one of four, concentric rings on the limbs, most commonly at the border of the hair at the nape. In one case with three and another with two rings, Pernet found the microsporon form, and Bodin traced another to the horse microsporon; but whether they are all small-spored I cannot say. In a case I saw at the East London Hospital for Children, concentric rings and gyrations formed the most complicated patterns nearly all over the trunk‡ of a baby, but the plurality of fungi was not then known, and probably it was large-spored.

In **megalosporon** cases the rings are larger than those above

* *Viertelj. f. Derm. u. Syph.*, vol. vii.

† *Ibid.*, vol. x., p. 98, with photograph; also plate xciv., figs. 1 to 4 of my Atlas. Figs. 2 and 3 were probably large-spored.

‡ Plate xx., Danielssen's *Vegetable Parasitic Diseases of the Skin*, represents a similar condition, but not quite so elaborate as my case.

described, or the borders more projecting, and the inflammatory phenomena more marked, so that there may be more scaling or crusting, and the border or even the whole patch may be vesicular or even pustular instead of papular; and speaking generally, the more marked the inflammation, the more certainly it is due to megalosporon, and if pustular, it is almost sure to be an ectothrix of animal origin. The extreme form is described under



Fig. 92.—*Trichophyton megalosporon*.

From an oval patch of *tinea circinata* on the wrist. Zeiss D.D. 10 in. tube.

Kerion. Occasionally microsporon may show marked signs of inflammation in the patches, but never pustulation.

Tinea Cruris seu Axillaris, *as the name implies, affects the fork and axillæ and is a form of megalosporon which used to be called *eczema marginatum*.

In these positions, the constant warmth and moisture favour the growth of the fungus, and the inflammation produced is

* Author's Atlas, plate xciii., an extensive case.

often much more pronounced than that in *tinea circinata* elsewhere. The primary rings spread rapidly, and soon coalesce, forming pigmented areas enclosed by festooned, papulo-scaly borders. The limits of the disease may extend almost down to the knee, and up to the umbilicus, between and over the nates, and up to the sacrum. The border is distinctly raised, often



Fig. 93.—*Tinea cruris*, contracted in South Africa. Zeiss D.D. 10 in. tube.

notably thickened, much broader than ordinary *tinea circinata*, with thick scales or even crusts from eczematous exudation, and there is usually considerable irritation. Sometimes fresh rings in large numbers form within the festooned enclosure, and in any case there is but little tendency to spontaneous recovery. The disease is seen in its most aggravated and obstinate form in hot climates, where it is much more common than here, and local names, such as Indian, Chinese, or Burmese ringworm

and "dhobie itch," have been given to it; but no real clinical difference has been established between the tropical and temperate zone forms of the affection, except that the inflammation may be deeper, and more severe and obstinate. The tropical disease called *tinea imbricata*, or Tokelau ringworm, is a separate affection.

I have had a large number of cases of *tinea tropica*, chiefly *cruris*, from all parts of the world. Pernet has examined many of them, and has found that microscopically they varied in appearance, but it was common to find very long slender mycelium, dichotomously branching, but often plain or only showing short



Fig. 94.—Mycelium from tropical Indian *tinea circinata* on outer border of foot, of three years' duration. It apparently went away for a year. Zeiss D.D. 10 in. tube. Private Notes, H. 342.

segmentation here and there. In other cases, sporulation was a strong feature, the segments or spores varying in shape and size, but sometimes they were round. Cultures were made on maltose agar, and they varied considerably. A case of dhobie itch had a pink culture. He came to the conclusion that they were all large-spored, but probably of different varieties.

Schiff showed a case of a child with *tinea cruris* and *capitis* at the Dermatological Society of Vienna; and Waelsch, from culture experiments on two cases, regards the fungus of the head and groin as essentially the same and identical with the third form of Kral, who in three cases found all three culturally different.*

* Neumann's Atlas, plate lxi., and Sydenham Society's, plate xxxvi., are also good examples.

Tropical tinea circinata may occur on any part of the body, chiefly the extremities. Unless recognised early and treated vigorously it may last for years. I have met with cases of ten years' duration and the diagnosis is often difficult, as it may die away in the cold weather and reappear when it is hot.

D. Moukhtar* of Constantinople has called attention to the occurrence occasionally on the palms and soles of tinea circinata, where it is very likely to take a vesicular form at first, and when later on, the epidermis gives way, it spreads with a raised collar of the horny layer, which may lead to an error of diagnosis. Several cases have been treated in the dry stage for the late palmar syphilide, while in the earlier vesicular stage it is very like a sweat eczema. The vesicular form would be extremely like dermatitis repens. Mansuroff's† case of *dermatomycosis circumscripta manus* appears to be an instance of this tinea circinata palmæ. Microscopic examination would be decisive if the tinea were thought of. It is probably due to a megalosporon, but the point has not been investigated.

The *treatment* of tinea circinata is given with that for tinea tonsurans.

Herpes tonsurans maculosus et squamosus of Hebra and Kaposi is the disease described in this work as pityriasis rosea (p. 360), and is not dependent on the ringworm fungus.

TINEA BARBÆ.

Synonyms.—Tinea sycosis; Hyphogenic sycosis; Sycosis parasitica; Mentagra parasitica; Parasitic sycosis; Ringworm of the beard; Barber's itch; *Fr.*, Sycosis parasitaire; Trichophytie sycosique; *Ger.*, parasitäre Bartfinne.

Definition.—Folliculitis of the hairy parts of the face, excited by the trichophyton tonsurans.

Ringworm of the beard is generally described as a very rare affection, but this is only true of the more severe or kerion forms, minor degrees of it, corresponding with tinea circinata, being not at all rare in my experience, but their nature is often overlooked.

* *Annales de Derm. et de Syph.*, vol. iii. 1892 (several communications). See also fig. 42, vol. ii., *La Prat. Derm.*, p. 281.

† *International Atlas*, plate xv.

Symptoms.—The disease begins as an itching, red, round, slightly scaly spot, which may enlarge and form a ring with a clear centre, or remain as a scaly, well-defined patch. The border is distinctly raised, and may be papular, papulo-vesicular, or slightly pustular, *i.e.*, a few of the papules may have a pustular point. Other patches usually soon form, and there are generally some hair-pierced pustules, either in or beyond the scaly patches. It is in this form, that the disease usually presents itself among the better classes, who shave daily and practise frequent ablutions.

In the more severe, or what may be called the kerion form, although the disease may begin in the same way, the inflammation soon becomes more severe, as in the following typical example.

A robust man, *æt.* thirty, with reddish-brown beard, stated that the disease began as a red ring, the size of a sixpence, on the side of the lower jaw, after being shaved at a barber's. The ring was soon followed by a scaly patch just above it. Shaving led to a watery discharge, the patches spread peripherally, and the more he shaved the more discharge there was, which soon became partly thick and glairy, partly "matter." When seen, two months from the onset, the whole of the chin and halfway up the sides of the face and the upper half of the neck were shining, deep red, and swollen, with irregularly lumpy, flattish masses, from half a walnut in size downwards, brawny to the touch for the most part, but with here and there soft patches, some of which had already discharged. The whole affected area was covered with hair-pierced pustules, except where frequent bathing with hot water had caused them to rupture, and there were outlying discrete pustules beyond the confluent area. The hair had been allowed to grow for about a quarter of an inch, and was easily, and almost painlessly, extracted even with the fingers, a characteristic early feature of the disease. Evidence of damaged nutrition of the hairs was not present. The dry, brittle, lustreless, broken or frayed stumps are, in my experience, found chiefly in cases of long standing. The chief sensation complained of was burning and tension, with only moderate tenderness. Between this and the first form described, are all grades of severity and extent.

The more severe forms may form convex elevations covered with pustular points exactly like kerion of the scalp.

The disease is more acute in development than coccogenic sycosis, but unless properly treated is almost as indefinite in its duration, and even when apparently cured, will relapse if not carefully watched for some time, owing to some of the spores having escaped destruction. The suppuration also may be severe enough to destroy the follicles and produce cicatricial baldness of the part. This suppuration may be, and at the commencement generally is, solely due to the pyogenic character of the fungus itself, but sooner or later pus cocci invasion occurs, and the features of coccogenic sycosis are mingled with the hyphogenic, and sometimes remain after the fungi are destroyed and thus prolong the disease. The disease may be associated with or originate from ringworm elsewhere. Thus, in one of my cases, it appeared to have arisen from an eczema marginatum of the forehead, this being followed by rings on the face. In another, the patient was in the habit of rubbing his chin where the eruption was, with the back of his hand, and on this three rings of minute hair-pierced pustules appeared. Buzzi records the converse of this, in which a man with tinea sycosis gave a typical tinea circinata to his wife, and she to their child.

Etiology.—The disease is generally contracted by those who are shaved by a barber, the fungous elements being probably conveyed by the shaving brush, and not by the razor as is popularly believed. Of course it may also be derived from children or animals who are suffering from ringworm; but this is a less common mode. It is more common in young adults than in the elderly, but is independent of the general health, though doubtless some local predisposition, probably the softer texture of the hair of the chin, is an important factor.

Pathology.—The disease is a folliculitis, usually pustular, of the hairy parts of the face, closely resembling coccogenic sycosis, but due to irritation from the presence of a fungus in the follicle. The severity of the inflammation, as compared to that of most cases of ringworm, is due to the pyogenic character of the fungus.

For the mode in which the fungus gains entrance into the hair, see the pathology of *Tinea Tonsurans*.

The reason that the hairs are loosened in this form and not, as a rule, in coccogenic sycosis, is, as Robinson showed, that in the tinea form, the process begins inside the follicle and separates the follicular walls from the shaft, the inflammation spreading

thence outwards, while in ordinary sycosis it begins without the follicle and spreads into it.

The readiness with which the trichophyton attacks the beard is a proof that it is not the age of a patient, but an anatomical change in the hair substance, which prevents ringworm showing itself in the scalp in adults, in the same way as in children.

Sabouraud's researches show that the fungus of suppurating



Fig. 95.—A hair from the beard in a case of tinea barbæ. $\times 700$ (Kaposi).
a, the portion with ectothrix fungus ; *b*, the part free from fungus.

tinea sycosis is always trichophyton megalosporon ectothrix, and of animal origin.

He has described four clinical types, all ectothrixes, but from different animals and with different cultures.

1. The typical kerion type due to the megalosporon of the horse. Culture of white colonies.

2. Superficial moist inflammation in scattered patches of bovine

or equine origin. Culture, yellow cribriform or vermicular colonies.

3. The diseased hairs are scattered and have an epithelial sheath over them, probably of avian origin. Culture, pale rose colonies.

4. Like common endothrix of childhood, but of animal origin. Cultures, deep purple.

Three and four are rare in Paris, but Pelagatti finds it to be fairly common in Parma.

5. Bodin adds an endothrix of human origin of which he has had five cases. Cultures, typical crateriform. Lesion was quite superficial in two zoned scaly patches, the outer pink and slightly raised. The hair breaks off short, is somewhat thickened, and the hair shaft filled with chains of spores.

Ullman found that histologically in the kerion form, there was first perifolliculitis with mononuclear leucocytes, then polynuclear leucocytes appear, which penetrate the root sheaths, distend the cavity of the follicle, and destroy its walls and the sebaceous glands. Giant cells were present. He thinks that the inflammation is excited by toxins.

Diagnosis.—A rapidly spreading folliculitis of the face, accompanied by brawny swelling, irregular lumpiness, loosening of the hairs, and perhaps evidence of their damaged nutrition, should lead to examination of the hairs by the microscope, when the fungus, if searched for carefully, will be found, but not in every hair from the diseased area. Those to which some root sheath is still attached are the most likely to show the fungus. Prolonged soaking in liquor potassæ is usually required, and in some cases repeated examination before it can be discovered.

From *coccogenic sycosis* it differs in its more rapid spreading, the frequency of multiple foci of disease, the greater lumpiness and brawny swelling, and the early loosening of the hairs, which are for the most part extracted without pain or difficulty, and are often without their root sheath.

From *eczematous folliculitis*, which may be even more acute than the tinea, it differs, in that an eczema is less scattered, is more superficial, unless of long standing, discharges serum at first; and even vesicles between the hairs may sometimes be seen. The eruption also is generally to be found in parts where there are no hairs, or at least a history of its having been elsewhere is

generally obtainable, the free surface eczema often clearing up and leaving the folliculitis behind. There is an absence of brawny swelling and lumpiness, and the hairs can only be extracted with pain and comparative difficulty, and with their root sheath attached.

Prognosis.—The disease may last for years if the cause is unrecognised, but is always amenable to appropriate treatment perseveringly employed.

Treatment.—The first and essential part of the treatment is systematic and complete epilation of the affected area. Each day a square inch or so should be cleared of hairs—and, owing to the loosening of the hairs, this is easily effected—and the parasiticide applied immediately afterwards. I do not agree with Jamieson that the acuteness of the inflammation is a contraindication for the immediate employment of parasiticides; on the contrary, that inflammation speedily subsides when its cause is destroyed.

The strength of the parasiticide need not be so great as that for ordinary tinea tonsurans. The formulæ suitable for kerion are suitable here also, such as oleate of copper ʒss to ʒj; sulphur ʒj, acid. carbolic. ʒss, lanolin c̄ oleo ʒj; and others are described in the treatment of acutely inflammatory tinea tonsurans. In this way, the great bulk of the disease is speedily removed, but watchful care and perseverance are often required for some time, in order to ensure complete stamping out of the vitality of the last spore of the fungus. The abscess-like swellings do not require incision, as the removal of the hair is sufficient to allow the pus to escape. Poultices should never be employed, as they favour the spread of the fungus. The milder forms require the same treatment as for tinea circinata combined with epilation. It has been stated that iodide of potassium internally has a curative action.

Tinea ciliarum, ringworm of the eyelashes, is a very rare affection, only four cases being on record, though probably it often escapes recognition. In one of Mibelli's cases,* a child of six, it was contracted from a cow, the father also had it in the beard. Mibelli found that in the eyelashes, the fungus was distinctly endothrix, while in the father's beard it was ectothrix, and as

* "Blepharitis Trichophytica," Mibelli, *Giorn. Ital. delle mal. vener. e della pelle, Fase III.*, 1894, and *Monatshefte f. prak. Derm.*, vol. xix. (1894); abs. *Brit. Jour. Derm.*, vol. vii. (1895), p. 64.

both came from the cow, he argues that it is the nature of the soil which determines whether the fungus is inside or outside the hair; moreover, it would upset Sabouraud's theory that all endothrix is of human origin.

The cilia were broken off short, generally concealed by a scale, and there was marked redness and swelling of the lid. In another case, an adult, the cilia were distorted, many broken, and pus round some others. In both cases, there was *tinea circinata* on other parts of the face, which was the key to the diagnosis.

The successful treatment was epilation and the application of a 1 in 5000 perchloride of mercury.

ONYCHOMYCOSIS.*

Synonyms.—*Tinea unguium*.

Strictly speaking this term applies to favus as well as to ringworm of the nail, but the former is very rare and has been

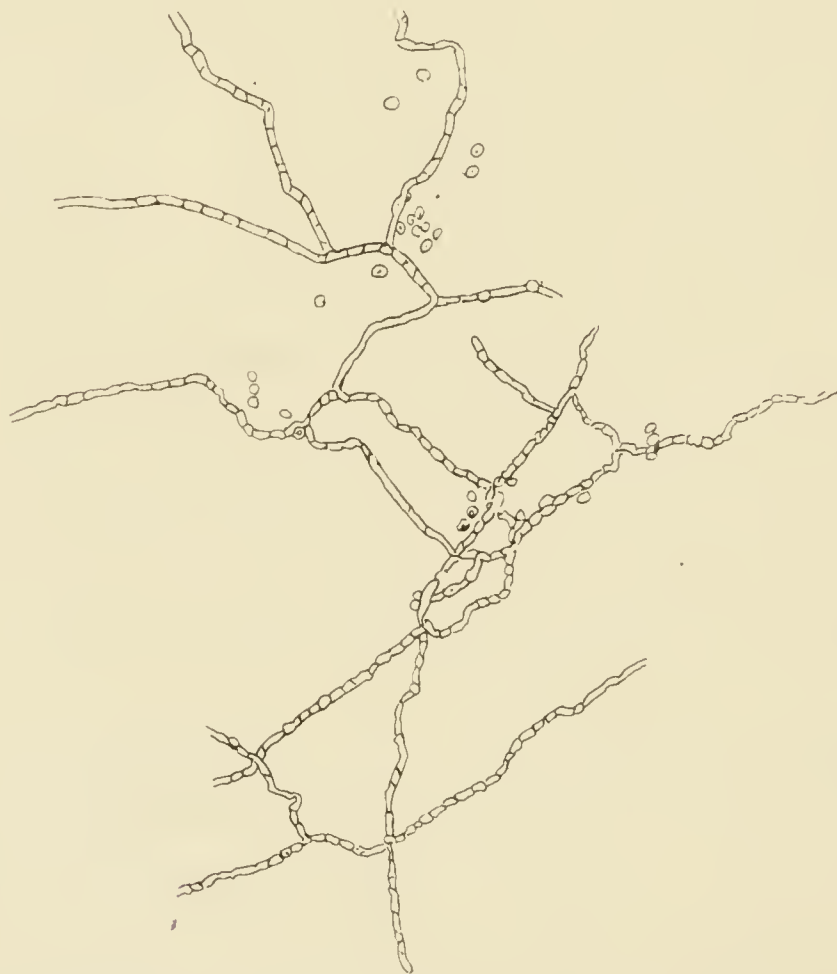


Fig. 96.—*Trichophyton* endothrix of nails. Zeiss DD. 10 in tube

described under favus, and only ringworm of the nail has now to be considered. According to Sabouraud, *tinea unguium* is always

* Author's Atlas, plate xc., fig. 12.

due to the trichophyton megalosporon ectothrix fungus, but Pernet has found endothrix in one of my cases, and in two (sisters) in his own practice. The appearances are very variable. Dubreuilh* says that invasion is usually by the side of the nail or by the subungual epidermic involution, seldom at the free border, and that it is always secondary to an old tinea circinata. It would also occur in childhood from scratching the head if affected with ringworm, and then would enter by the free border, Dubreuilh himself records such a case, a girl with kerion of the



Fig. 97.—Onychomycosis from tinea tropica, affecting toe nails. The disease had been present 10 years, and the nails were chipped and crumbled. It was called in India “dhobie itch,” and was supposed to have been cured by gunpowder. Zeiss D.D. 10 in tube.

head and tinea unguium. It leads to a dirty yellowish or blackish discoloration of the nail with thickening, due to partial separation of the component layers, chipping and splitting of the free border, dulness or roughness, or a fibrous surface, the surface layers being sometimes exfoliated. Extreme onychomycosis is sometimes seen on the toes, or there may be only opacity and loss of polish.

* Arnozan and Dubreuilh, *Archives Cliniques de Bordeaux*, February, 1892.

There may be transverse ridging or longitudinal striation; separation from the nail bed sometimes occurs. There is thus nothing distinctive from other trophic changes except asymmetry and chronicity, and unless there is a history of a more characteristic lesion, on the hands or elsewhere, the nature of the affection would probably not be suspected. Ehlers has found it very common in wool carders in Iceland. The disease may last for any number of years.

In one of my cases, a man over sixty came to the hospital with tinea circinata affecting the back of the hand, subsequently two nails, the second and third, became affected, and scrapings showed the same fungus (megalosporon endothrix, fig. 96). The index finger nail being noticed to be something like the others, he said it had been so from boyhood, and scrapings showed fungus in it also. (Fig. 1, plate iv., shows a hair from his first phalanx.) In another case, a lady contracted tinea of the sole of the foot ten years previously in India, her toe nails had been affected ever since (fig. 97).

In order to find the fungus, very prolonged soaking (twenty-four hours sometimes) of scrapings in liquor potassæ is necessary, and it is better to use a 40 per cent. solution. The complete disintegration of the nail substance thus produced is advantageous for finding the fungus. If there is any lesion on the back of the hand, the hairs on the proximal phalanges should be examined.

TINEA IMBRICATA.*

Synonyms.—Tokelau or Bowditch Island ringworm (lafa Tokelau); Le Pita; Gune; Cascadœe; Herpes desquamans.

Definition.—A tropical, vegetable parasitic, contagious disease, characterised by the formation of patches of concentric scaly rings.

* *Literature.*—Hirsch's *Geographical and Historical Pathology*, vol. ii., p. 375. *Med. Rep. of Imp. Maritime Customs for China*, 1879; abs. in *Med. Times and Gazette*, vol. ii. (1879), p. 342. McCall Anderson, *Ed. Med. Jour.* for September, 1880, with plates. Manson, *Brit. Jour. Derm.*, vol. iv. (1892), p. 5, with history and bibliography. Nieuwenhuis (Java), "Tinea Imbricata," *Archiv f. Derm. u. Syph.*, vol. xlv. (1898), p. 163, with plate of cultivations. Tribondeau, *Arch. de Méd. Navale et Coloniale*, July, 1899, p. 5; full abs. *Brit. Jour., Derm.*, vol. xi. (1899), p. 400, and note by Manson.

It is usually said that the first medical description of this disease was in 1844 by Fox in America, under the name of "gune" (native word for skin), but Alibert gives a plate of it from a child from Port Dorey in his quarto of 1832, p. 492. Subsequently it was re-described by Turner, Königer for Samoa, Manson for the Malaccas and China, and Macgregor for Fiji. It is confined to the tropics ; and although spread pretty widely over the various groups of islands in the South Pacific, it has been especially prevalent in the Malay Archipelago and the Gilbert Islands, where Fox observed it, and whence it spread to the Tokelau and Samoan groups. It has also been observed in Burma and Southern China. It is most prevalent in a damp equable climate with a temperature between 86° F. and 90° F. and extremes of temperature prevent its extension. The cascadoe of the Malaccas, described by P. van Meederwoort, is evidently the same disease. It has never been seen in England.

Symptoms.—With rare exceptions, the disease avoids the scalp, face, and forehead ; and even when it invades other hairy regions, the fungus, Manson says, does not invade the follicles, leaving, consequently, the hair unaffected ; but Königer* states that the hair on the body (not the scalp) is almost destroyed where the eruption has occurred. Tribondeau says the nails are always spared.

With the exception of the head, it may attack any part of the body ; and when it has existed sufficiently long unchecked, it may spread over a whole limb or region, or the entire body surface.

A separate, fully developed patch consists of concentric rings of scales, these rings being about a quarter of an inch apart, and eventually filling up the whole patch, which then looks like watered silk. The scales vary in size up to half an inch square, and are free at their external edges, which are slightly curled, except in old cases, when they become large, thick, and horny, and give the body the aspect of being coated with clay ; hence the native name, meaning "clay-skin." "The appearance of comparatively recent patches," Turner says, "may be imitated by taking a sheet of stout cardboard and shaving the upper layer of it in such a way as to make it curl up in circles." Königer describes the disease as beginning "with an eruption of small

* Virchow's *Archiv*, 1878, Bd. 72, p. 413.

papules, mostly grouped in circles, which cause intense itching and desquamation round their growing periphery. Afterwards these circular efflorescences coalesce, the skin becoming at the same time hard, dry, and brittle." Tribondeau says that the initial lesion may also be vesicular, with clear or slightly yellow fluid; that rings develop from them more rapidly than from the papules, which he describes as rounded, hard, greyish-yellow with a pale pink border. Patrick Manson has repeatedly inoculated the disease, and thus describes its development: "After inoculation there is an incubation period of about nine days. At the end of this time, the fungus has multiplied sufficiently to slightly elevate the epidermis under which it is growing, and form a brown mass between it and the corium. When this has reached a diameter of about three-eighths of an inch, the epidermis in the centre gives way; but as it is still organically continuous with the sound skin at its margin, it is not completely shed, but remains as a fringe round the central depression. By friction or other means the free edge of the scale is from time to time removed, and the brown central fungus and the tissue it is mixed with, now no longer protected by a closely adhering epidermis, are rubbed off as far as the attachment of the scale, and the exposed corium appears pale. Just beyond this point, the advancing fungus shows through the epidermis as a brown rim, perhaps very slightly elevated, about one-sixteenth of an inch in breadth. When the entire ring thus formed has attained a diameter of about half an inch, a brown patch is again seen to be forming at its centre; this, in its turn, also cracks the young epidermis over it, and a second ring is formed inside the first, which it follows in its extension. A third brown central patch is formed in the centre of the second circle, and behaves in exactly the same manner, and so on with a fourth, fifth, and a never-ending series of concentric rings," but Tribondeau never saw more than four.

The patches extend at the rate of a quarter to half an inch a week.

The only symptom attending the eruption is the intense itching, and the consequent scratching is an important factor in spreading the disease. Where the scales have come off, stains are left in rings, or sinuous lines of a livid colour remain, which are very persistent, and may be permanent. The disease is much dreaded by the natives, but, though very disfiguring, is not injurious to the general health.

Etiology.—The disease is undoubtedly contagious, attacks both sexes at all ages, but especially children, Meederwoot stating that it always begins from the second to the fourth year, but this is only true for a large proportion. It is tropically endemic. Manson thinks it requires special climatic peculiarities for its development.

Pathology.—Königer and Manson were the first to demonstrate its fungous parasitic origin, and Manson called the disease and fungus, *tinea imbricata*. The fungous elements are confined to the epidermic layers, especially the under surface, and do not affect the hair follicles; and according to McCall Anderson (with whose observations those of Manson, made on fresh scales, nearly agree), who examined some of the scales, as compared to *tinea circinata* the fungus is much more abundant, the chains of spores much more numerous than the mycelial threads, and the spores, though of the same size, instead of being round, are oval, rectangular, or irregular, while the mycelial threads are long, straight, or gently curved; but Siegfried, on the other hand, writing from Amoy, says that the mycelium is large-sized and predominates over the spores, which are sparse. Tribondeau also found abundant mycelium. Nieuwenhuis of Java succeeded in cultivating the fungus on two per cent. agar and five per cent. malt extract and other media, with a slight alkaline reaction. The development was very slow. He and Sabouraud regard the fungus as a large-spored trichophyton, very like European animal trichophytons. Pernet from material sent him from Pahang describes the fungus as consisting of masses of interlacing mycelium, some plain, but most with short, thick, round segments, and dichotomous branching. The spores were numerous, scattered about in rows and clumps.

Diagnosis.—This would offer no difficulty in the regions where it is endemic. The concentric scaly rings which tend to fill up the central area, while the outer ring is spreading peripherally, differ completely from *tinea circinata*, in which the central area clears *pari passu* with peripheral extension, except in a few cases which were described under *Tinea Circinata*, but even then there would not be the flaky scaliness and the pigmentation.

Treatment.—Although the fungus is quite superficial, this is more difficult than might be expected. The clothes and other coverings should be destroyed or disinfected. The scales should

be removed by alkaline or sulphide of potassium baths, and then Manson recommends linimentum iodi, double strength, painted on to a limb or other portion of the body, and extended each day. Other methods of treatment would be the same as for the more obstinate forms of tinea circinata. Goa powder or chrysarobin, applied as there directed, is one of the most efficacious means of cure. It is best applied after a hot soft soap bath followed by pumice-stoning. Relapses, especially when the dirty belongings are retained, must be watched for and promptly dealt with.

TINEA VERSICOLOR.

Synonyms.—Pityriasis versicolor; Chloasma (old name); Mycosis microsporina; *Ger.*, Kleienflechte.

Definition.—A vegetable parasitic disease, situated chiefly on the trunk, which is characterised by patches of various sizes, shapes, and shades of brown colour.

This disease is more common than might be inferred from dermatological statistics, which in England and America give rather more than 1 per cent., Hublé, in France, having found it in '68 per cent. in examining over two thousand healthy young soldiers; in my own clinic, it is less than $\frac{1}{2}$ per cent., while in Duhring's it is over $2\frac{1}{2}$ per cent., and in the hot countries of the East it is very common.

Symptoms.—Practically it may be said to be confined to the trunk, though in a few cases, it extends a little beyond, to the neck, thighs, and arms, and even to other parts.

It occurs either in discrete, roundish spots or patches, of the size of a split pea and upwards, which may remain separate and be scattered freely over the body, but more frequently they coalesce into large, irregularly outlined tracts, which may cover the whole trunk, but generally more on the front than the back. Discrete patches, in greater or less numbers, are usually scattered beyond and between the main tracts; the extent, however, is very various, and there are all gradations, from one or two moderate-sized patches upwards, but the bulk of the disease is generally on the chest, abdomen, and interscapular region.

The patches are usually of a fawn colour or some other shade of brown. The edges are sharply defined, especially where they are extending, but scarcely perceptibly raised above the surface,

which is usually slightly furfuraceous, unless sweating is profuse, when it may be smooth and greasy to the touch. On scratching it with the nail, much of the discoloration can be removed, either in scales or rolls, for the growth affects chiefly the superficial epidermic layers. Itching may or may not be present, but it is seldom very marked. The patches spread slowly, as a rule, but may extend rapidly in a very congenial soil. If untreated, it may last indefinitely, and it has a great tendency to relapse after apparent cure.

Variations.—In a few cases, the disease extends for some distance down the limbs; I have seen it in the popliteal space three times and on the elbows twice; and Dubois-Havenith observed it covering almost the whole of the arm and forearm to the wrists, and over the neck. It may even affect the face, though it is rare for it to extend beyond the covered parts. Thus Biart* of Nebraska records a case of a man in whom there were pea- to finger-nail-sized patches on the left cheek up to the external canthus, and a continuous band over the greater part of the forehead, which encroached slightly on the scalp; there was also a spot behind the ear, while on the trunk it was very extensive, and reached down both arms, on the right extending to a little below the elbow. Payne also found the microsporon furfur abundantly in the scales from the scalp and beard, where apparently there was only a simple pityriasis, but the patient had had tinea versicolor on the trunk for some years. In Assam, A. Powell† says that it is very common on the face; he ascribes this to the fact of the natives rarely using soap.

Gottheil‡ relates the case of a Cuban medical man, who had black spots on his left palm for fifteen years. The lesions consisted of discrete round macules in places running into slightly scaly patches of a dark brownish-black colour. Microsporon furfur was diagnosed from microscopical examination. A. Coffin met with the case of a woman who contracted it from her husband seven months after marriage, and the patches almost disappeared at each monthly period.

Sometimes, chiefly in persons who sweat profusely, the disease

* *Amer. Jour. Cut. and Ven. Dis.*, vol. iii. (1885), p. 73.

† *Lancet*, December 30th, 1899, p. 1809.

‡ *New York Med. Rec.*, July 1st, 1899, p. 15. Abs. in *Brit. Jour. Derm.*, vol. xi. (1899), p. 403.

commences with, or is accompanied or followed by, signs of inflammation. The patches are then red and often very itchy, and occasionally may become eczematous. The colour also may be much darker than usual ; I have once seen it dark brown ; and even black (*pityriasis nigra*) is recorded by Willan, Cazenave, Tilbury Fox, Gottheil, and by C. W. Allen on the neck. These black cases were in individuals who had been in hot climates. According to Hebra, however, the *pityriasis nigra* of Willan is really the pigmentation which follows prolonged phthiriasis. On the other hand, Lutz, writing from Honolulu, points out that in coloured races it produces white, or, where the fungus is very abundant, grey discoloration of the skin. The whiteness persists for some time after the fungus has been destroyed, and he attributes it to the layer of fungus preventing the light from exerting its usual actinic effect, and so the dark colour is not developed in the material from which the pigment is formed, and this can be recognised in the rete, but without coloration.

Etiology.—Eichstedt of Greifswald in 1846 was the first to demonstrate that the disease was due to the growth of a fungus which he called *microsporon furfur*. It is contagious, but only to a slight degree, requiring a congenial soil, not to be found in all persons, and prolonged contact, as in the occupants of the same bed, though husband and wife do not necessarily communicate it to each other. Köbner succeeded in inoculating both men and rabbits with the fungus. It affects both sexes, but men rather more frequently than women in my experience, but it is seldom seen in the very young or very old, occurring chiefly between twenty and forty. The extremes, in my experience, are sixteen and seventy years, but Sidney Phillips showed a case at one of the Societies of a boy, æt. seven and three-quarters, with patches on the chest and back. It is certainly more common in those who perspire freely, and this may account for its being seen so often in the phthisical, though some think that malnutrition is the favouring factor. It is certain however, that it is by no means infrequent in perfectly robust individuals, and cleanliness is no safeguard against it, though it would be less likely to attack, and spread much less slowly in, people who wash thoroughly and frequently change their underclothes. According to some experiments of Daguet and Héricourt,* however, the fault is on

* Abs. of their paper in *Lancet*, May 8th, 1887, "Pityriasis and Phthisis."

the other side, and they think that the microsporon furfur fungus produces phthisis in some instances, as they found this fungus in the diseased tissues, and the injection of the fungus rendered guinea-pigs and rabbits tubercular. These deductions are *à priori* improbable, and the experiments require confirmation before they can be accepted as correct. Two other French observers assert that it only occurs in persons who have both seborrhœa and dyspepsia.

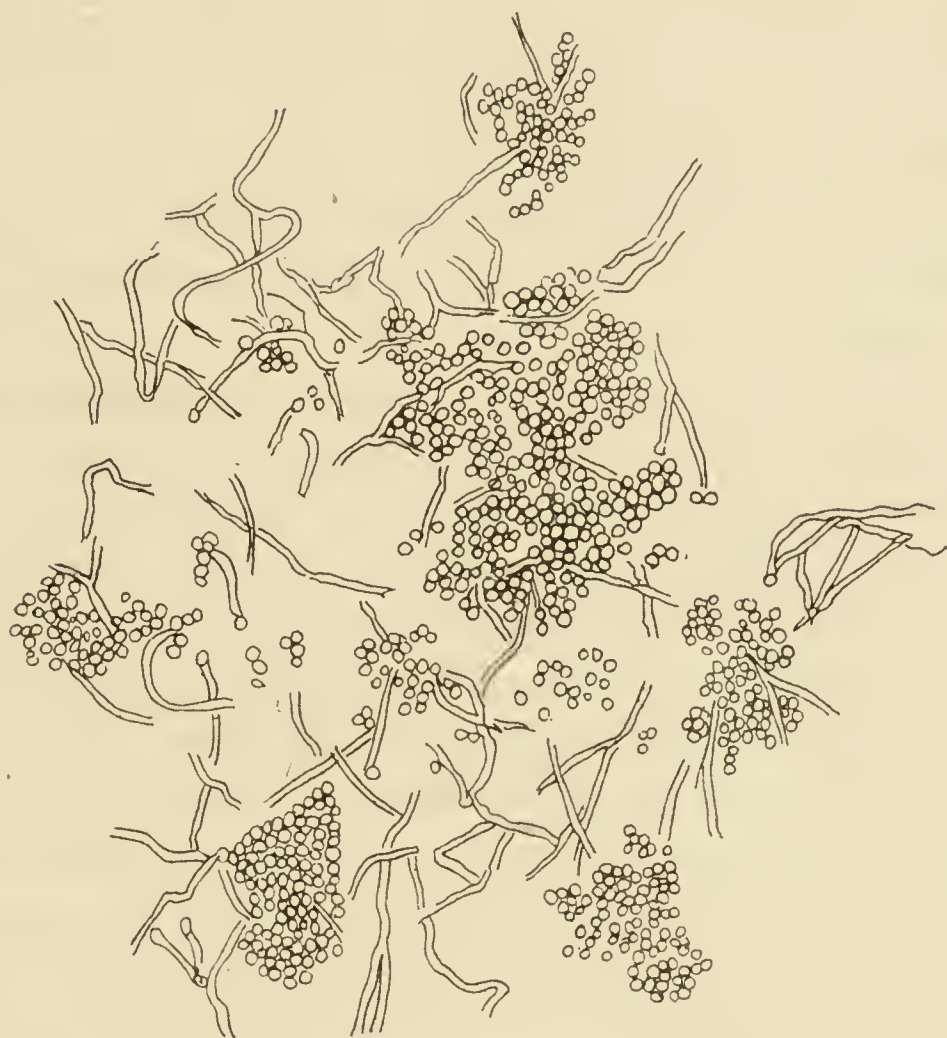


Fig. 98.—*Microsporon furfur* from a woman, æt. 70. × Zeiss D.D. 10 in. tube.

Pathology.—The colour is mainly due to masses of strongly refracting conidia, which are situated almost entirely in the upper part of the horny layer, and Waelsch says they never go below that layer. According to Gudden, they also penetrate into the lanugo hair follicles. The microsporon furfur is one of the most characteristic fungi of the skin. The conidia are arranged in closely crowded conical heaps, around which are the mycelia, interlaced more or less together, and connecting the neighbouring heaps of conidia. The conidia are, as a rule, round, larger than those of ringworm, rather smaller than a red-blood corpuscle, and fairly uniform in size. They consist of transparent protoplasm

enclosed in a doubly contoured membrane, containing a strongly refracting yellowish nucleus. The mycelia are not very long, for the most part unbranched, and may be even or jointed, singly or doubly contoured with nuclei at regular intervals, and when fully developed show conidia at their termination, these latter coming off either directly from the mycelia or budding from each other (fig. 98).

The fungus can be readily detected by washing the scrapings in æther to remove the fat and then examining them in liquor potassæ, taking care to tease out the masses, so as to get a sufficiently thin layer.

Spietschka* found that, while cultures in the same media were identical in twelve cases, when the medium was varied very different-looking cultures resulted. He reproduced the disease from pure cultures.

Matzenauer† also cultivated the fungus; he started on Finger's "epiderminagar," and was then able to transplant it on to the ordinary media, and grew yellow or amber colonies on agar and liquefied gelatin. The older the colony, the greater the spore development. Gastou and Nicolau‡ confirmed Matzenauer's observations, but made their cultivations on gelose moistened with placental serum, but with many failures. The only mode of development they observed was endo-sporulation.

Diagnosis.—The yellowish-brown discoloration situated chiefly on the trunk, and capable of being peeled off by scraping with the nail or a knife, and the microscopical appearances, are distinctive. The diseases most like it are *seborrhœa papulosa*, or *lichen circinatus*; *pityriasis rosea*; and *erythrasma*. The differences from the last are given under that disease.

Seborrhœa papulosa does not travel beyond the trunk, has a red, papular margin, and is more often in separate small patches than *tinea versicolor*. The microscope would always be decisive in a case of doubt.

Pityriasis rosea is acute in course, affects the limbs as much as the trunk, has fine, silvery scales, and only faint discoloration when it is fading and the inflammatory symptoms have subsided.

Prognosis.—The disease is always amenable to treatment.

Treatment.—The skin should be thoroughly washed with plenty

* *Archiv f. Derm. u. Syph.*, vol. xxxvii. (1896), with plate.

+ *Loc. cit.*, vol. lvi. (1901), p. 163.

‡ *Annales*, vol. iii. (1902), p. 414.

of soap and warm water—soft or pumice-stone soap preferably if the skin is not very delicate—and scrubbed with a nail brush; the greasiness of the skin is thus removed, and the superficial layers roughened up, which allows the parasiticide to penetrate more thoroughly. The skin is then rubbed with a piece of flannel dipped in the following lotions: sodæ hyposulphitis ℥ss, aquæ destillat. ℥viij, immediately followed by tartaric acid ℥ij, aquæ ℥viij, by which nascent sulphur and sulphurous acid are produced in the skin.

The under-flannels must be thoroughly baked, boiled, or preferably thrown away. This treatment should be repeated once or twice a day, and never fails to cure, provided that the patient, even after the disease is apparently well, watches for some months for any reappearance, and attacks the smallest recurrence immediately. Disappointment frequently follows from the neglect of this precaution. A few spores here and there, lying perhaps deeper than the rest, escape destruction at first, and when left unmolested are the new starting-point for fresh patches. The above treatment is the one I invariably adopt, as it is effectual and convenient, but there are many other methods. Any of the parasiticides recommended for *tinea circinata* will do; preparations of thymol, chrysarobin, sulphur, fresh sulphurous acid (formulae for which may be found at the end), are all effectual.

They all, however, require the same watchfulness against recurrence; and watery lotions must be preceded by soap-and-water ablution to remove the grease. Vigier recommends merely mechanical treatment, viz., prolonged frictions with finely powdered pumice stone fifty parts, soft soap one hundred parts; or Unna's marble soap would act in the same way; but hyposulphite of soda or sulphurous acid lotion used after the soap, would render the cure more rapid.

ERYTHRASMA.*

Definition.—A vegetable parasitic disease producing brownish patches.

This trivial affection was first described by Burchardt (1859), and then by Bärensprung (1862), and later by Besnier, Balzer, Dubreuilh, Riehl, Weyl, Köbner, Payne, etc., who all regard it

* *Literature.*—Burchardt, *Ueber eine bei Chloasma vorkommende Pilzform.*

as a separate affection, with which I agree. It is not very uncommon in men, but more so in women, and as it produces no inconvenience, is usually only discovered accidentally.

Symptoms.—It occurs almost exclusively in the folds of the axillæ, inguinal and genito-crural regions, the cleft of the nates, and the adjoining parts of the trunk or limbs, usually by extension, but sometimes arising there independently. Reale also observed it in the bend of the elbow, and cultivated the organism. It occurs as roundish or irregularly outlined, well-defined, slightly furfuraceous patches, of variable size at first, of a uniform reddish, later on, of a yellowish, reddish, or dark brown tint, and slightly unctuous to the touch. The patches are generally few and small, but occasionally it covers a large area, as in Besnier's case, where it extended all over the thighs and upper arms, but as a rule it is confined to warm and moist situations. It spreads very slowly; if not treated, it may remain for years unaltered, producing no symptoms, or only very slight itching. Riehl's youngest case was sixteen years, his oldest fifty-eight. A case of mine was sixty-six.

Pathology.—Many writers have regarded it as a *tinea versicolor* or an *eczema marginatum*, but all the authorities above mentioned are agreed that it is due to a separate vegetable parasite, which Bärensprung called *microsporon minutissimum*. A power of five or six hundred diameters is required to see the organism well. Payne regards it as a "mucor in its mycelial stage without sporangia"; he describes it as consisting of a series of interlacing jointed threads, with segments of unequal length and variable thickness, sometimes terminating in slightly swollen, blind extremities, but without branching; they were situated between or at the borders of epithelial scales; he was doubtful whether there were any true spores. Balzer, on the other hand, describes in addition, groups of minute spores here

Med. Zeitung, 1859, p. 141. Bärensprung, *Ann. des Charité Krankenh.*, 1862, Bd. x. Balzer, *Ann. de Derm. et de Syph.*, vol. iv. (1883), p. 681, and vol. v. (1884), p. 598. The first contains a plate of the parasitic elements, the second a good general account, with bibliography. Ziemssen's *Hand-book*, p. 526. There is a good abstract of Riehl's paper in *Amer. Jour. of Cut. and Ven. Dis.*, vol. ii. (1883), p. 84, with woodcuts. Payne, *Path. Trans.*, vol. xxxvii. (1886), p. 516. Ducrey and Reale, "Contribuzione allo studio dell' Erythrasma. Naples: Angelis-Bellisaris (1893), and *Monatshefte f. p. Derm.*, vol. xix. (1894), p. 414.

and there; in size, these various elements were about one-third those of *tinea tonsurans*. Neither Balzer nor Payne agrees that the spores, etc., found by Bizzozero in normal skin, especially between the toes, are of the same characters as *microsporon minutissimum*.

Ducrey and Reale consider that it is a fungus cultivated with difficulty, and consisting of minute spores and fine mycelial threads, and that its presence in erythrasma is constant and abundant, and at the same time cultures from normal skin, and pityriasis versicolor show the same fungus, but in small quantity. Inoculation experiments with erythrasma cultures or scales have hitherto been unsuccessful; still, they think it is the real cause of the disease, but that it requires a special soil, a suitable condition of moisture, and of decomposition of secretions for its full development. They say that the parasite easily cultivated by Pasquale de Michele* was a *schizomyces*, but do not explain his claim to have reproduced the disease in the inguino-scrotal region from cultivations. He also found the common *leptothrix epidermidis* in the scales, but inoculation of cultures produced no result.

Diagnosis.—The only disease for which it could fairly be mistaken is *tinea versicolor*. The absence of the disease to any extent on the trunk, the slighter disturbance of the horny layers, and the darker or redder colour of the patches ought to suggest its nature, but in doubtful cases, microscopic examination would be required, when the different characters of the parasite of the two affections would be obvious; in the absence of the well-marked signs of inflammation of *tinea cruris* one would distinguish it at once from that disease.

Treatment.—This is the same as for *tinea versicolor*, and the same precautions against recrudescence are required.

PINTA.†

Synonyms.—Spotted sickness; Mal de los pintos; Mal del pinto; Tiña (Mexico); Caraate, or cute, *i.e.*, look at his face (Venezuela and Granada); Quirica (Panama); Pannus carateus (Alibert).

* *Giornale Internaz. de Scien. Med.*, November 15th, 1890. Abs. *Brit. Med. Jour.*, April 18th, 1891.

† *Literature*—Hirsch's *Geographical Pathology*, vol. ii., p. 379; a full

Definition.—A tropical contagious hyphomycetic disease which produces discoloration of the skin.

The disease appears to be confined to the tropical regions of America between 27° north and 28° south, especially along the river banks. Possibly some of the discolorations in other parts of the world, such as the lola of Surinam, may be of a similar nature and Legrain has reported an achromia (not leucodermia) from the Sahara and a coloured skin disease which occurs in groups in Tripoli which he identifies as pinta, but he could not discover the fungus. True pinta occurs extensively on the west coast of southern, and in other parts of Mexico; in Columbia, New Granada, Brazil, especially in the province of San Paolo, and sparsely in Panama, Peru, and Chili. It is said to have been imported into Mexico in 1775 from South America, where it was prevalent before the Spanish conquest of Mexico; but this can scarcely be correct, as it is mentioned in the Encyclopædia of Polanco of Mexico in 1760, and was the subject of Aztec prayers for centuries. It was described by Alibert in his 1832 edition.

Symptoms.—Following Iryz of Mexico :—the disease consists of scaly spots, very variable in colour, shape, number, and size, and appears to be allied in its characters to tinea versicolor. It usually begins on uncovered parts, such as the face and extremities, but may affect the scalp and all parts of the body except the palms and soles. It varies in extent from quite a small area to almost the whole body surface. New patches may be continually forming. While they increase in size, both by peripheral extension and by confluence with their neighbours, they are not at all, or very slightly, raised above the surface. Their shape may be roundish or irregular, sharply defined or shading off into the healthy skin, of black, greyish, blue, red, or dull white hue. The first three are superficial and spread rapidly; the red and white affect the rete mucosum and corium and spread slowly. There are thus two classes: the epidermic and sub-epidermic. Sometimes all these colours are present on the same individual, though at first all the spots were of one colour, and only at a later stage, were the new

account with bibliography to date, *Brit. Med. Jour.*, vol. ii. (1882), p. 903; abs. from paper by Dr. Iryz read before Academy of Medicine in Mexico. E. Lier, Letter from Mexico to *Monatsh. f. prakt. Derm.*, vol. xiv. (1892), p. 447, with history and some Mexican bibliography. A. Gavino, Mexico, Inter. Cong., Rome, 1894, *Trans.*, p. 33.

spots of different tint; or the patches may be of uniform tint throughout the whole course of the disease, and the individual patches never change colour after they have come out. The patch is furfuraceous at first, chiefly in the black and blue forms, but the scales are larger in advanced cases, and the surface usually feels rough and dry, seldom moist and greasy or glutinous. In the red form, ulceration sometimes occurs. The white form does not itch nor desquamate, and in many cases, there is no fungus to be found. In hairy parts, the hairs get thin, turn white, and ultimately fall out.* Some of the blue cases look as if tattooed with gunpowder, while the white patches have a cicatricial aspect, with a dark ring, and the skin is hard with diminished sensation. The itching is in proportion to the scaling, and may be very intense, and the patient's emanations are offensive, smelling, according to some, like foul or mildewed linen, or, as others say, like cat's urine. No other symptoms are present, except those due to scratching, though, according to some authors, severe gastric symptoms, which last from four days to a week, precede the outbreak in a few cases, the skin eruption not appearing until six weeks later: probably such symptoms have no relation to the disease.

While the disease is always chronic, lasting months or years, or even all the patient's life if untreated, it often spreads but very slowly, or remains stationary for a long time in the red or white form, while in the black and blue variety the extension may be very rapid and general.

According to Montoya y Florez, who has studied *caraate* in Columbia, the red variety attacks almost exclusively white people, and is not confined to the poor. Beginning on the back of the hands and feet, it then attacks the neck and face, at first as defined red scaly patches, then festooned or map-like, and finally extends over the whole body, which becomes of a brick-red colour. Ulceration sometime occurs, and on the palms, soles and lips, painful fissures. It runs a slow course and may last indefinitely. It flourishes in towns and in the shade. The violet black form is chiefly seen in negroes, only three per cent. of the cases being whites. It is seen chiefly in outdoor workers, attacks first parts exposed to the sun or injuries, finally extends all over the body, but only after many years. It is a more superficial and

* Montoya y Florez says the scalp and beard are never attacked.

milder form than the red variety. He also describes the violet, grey and bluish-violet forms. The white form Montoya says is the final retrogressive stage of any variety except the red. In the black and blue cases, the patch is furfuraceous at first.*

Etiology.—It attacks both sexes and all ages, except infants, in arms. The disease is contagious, and, as might be expected, it is most prevalent where there is dirt and neglect, and hence it is more common in the poor than in the rich, and among the dark races and half-castes than among the whites, though all are liable to it under circumstances favourable for its development. A tropical climate which includes moisture as well as warmth, is evidently one essential factor, while an elevation above five thousand feet and a mean temperature below 60° F. are unfavourable conditions. Though it may commence in sound skin, a dermatitis such as eczema favours its development.

Pathology.—Gastambide has clearly shown the fungous origin of the pinta of Mexico, which Sabouraud says (without stating his reasons) is analogous but not identical with caraate of South America.

Anatomy.—Gastambide's fungus is situated in the epidermis, and his observations favour the view that the black and blue spots are more superficial, never going beyond the horny layers, and when the disease is cured leaving no trace behind; while in the red and white the deep parts of the rete are involved, and Iryz says the corium also, and permanently white spots may mark the site of the previous eruption; and in one of Iryz's cases the whole body, including the hair, was left quite white.

The fungous elements consist of roundish and oval spores about eight μ in diameter, and tapering in branched mycelial threads, to which the conidia are attached. The results of Montoya y Florez's studies of Columbian caraate as given by Sabouraud † are as follows:—The caraates are the aspergilloses of the skin, and each form has a separate species (about twenty so far). The fungi appear as long dichotomous filaments, very fine, smooth, and cylindrical, sometimes granular and in chaplets. At some points, a close reticulum is formed, from which emerge two, three, and four fine mycelial threads side by side; elsewhere by dichotomy a fine filament emerges, and a short, thick branch, which generally terminates in a relatively voluminous fructification, characteristic of the particular species of caraate under observation. Not only the mycelium but the fructification can be found in the epidermis under the microscope. He traces the fungi to a saprophytic origin, as he has found

* Barbe has described a case from Columbia which he observed in Paris, and traced stages of erythema, deeper red, going on to bluish tint, then hyperchromia, and finally achromia. The hairs on the achromic parts became white but did not fall out.

† *Annales de Derm. et de Syph.*, vol. ix. (1898), p. 673.

a violet ash-coloured form in the water of gold mines, which contain sulphate of iron and copper, and various forms in certain species of mosquitoes and bugs. It has also been found on some cereals. The analogy of these observations to those of Sabouraud on the trichophytons is obvious, as is also the inference that we are far from finality on the subject. At the same time they rendered obsolete the conclusions of Lier of Mexico, that it is merely a pigmentary non-contagious, but hereditary malady, unaffected by public hygiene, and only requiring treatment on æsthetic grounds.

Diagnosis.—The diagnosis can offer no difficulty in countries where it is endemic.

The *treatment* is the same as for tinea versicolor, but, like it, the skin must be watched carefully for some time to eradicate any recrudescence from spores which have escaped destruction. Probably chrysarobin would be the most efficacious, but Montoya says that mercurials are certain cures, but it is obvious that they must not be used over a large area at once. Barbe found citrine ointment efficacious.

ACTINOMYCOSIS OF THE SKIN.*

(*ακτίς*, a ray ; *μύκης*, a fungus.)

Definition.—A parasitic affection due to the ray fungus, which excites suppurations and granulation sarcoma-like tumours in the tissues.

Actinomycosis is a very rare affection of the skin (less than

* *Literature.*—Neumann's Atlas, plate xiii., and Malcolm Morris, *Lancet*, June 6th, 1896, give good coloured plates of the disease on the face, and numerous references; and Pringle, *Med. Chir. Trans.*, vol. lxxviii., 1895, of the skin over the ribs. Kopp's Atlas, plate lxxv. Uncoloured illustrations of the face or neck have been published by Illich (*loc. cit.*), and Darier and Gautier, *Ann. de Derm. et de Syph.*, vol. ii. (1891), p. 449. E. Ponfick, *Actinomykose des Menschen*, Berlin, 1882, with coloured plates. J. Israël, *Actinomykose des Menschen*, Berlin, 1885. A. Illich, *Klinik der Aktinomykose*, Wien, 1892, with photographs and references to five hundred and sixty-nine communications. English readers, for a general account of the subject, may consult Hime's full abstract of Israël's monograph in *New Syd. Soc., Microparasites in Disease* (1886), and the observations of various authors in the *Transactions* of the learned societies; or "Actinomycosis hominis," by M. Skerritt, *Amer. Jour. Med. Sciences*, vol. for 1887. Crookshank, *Text-book of Bacteriology*, fourth edition. T. D. Acland, "Actinomycosis and Madura foot," Art. in Allbutt's *System of Medicine*, 1897. References to date. Poncet et Bérard, *Traité clinique de l'Actinomykose* (Paris: Masson et Cie, 1898). *Jour. Mal. Cutan.*, vol. xiv., April, 1902, contains abs. of several cases, and of an historical paper by Blanchard, showing that numerous cases by old authors were recorded but misunderstood.

3 per cent. of all cases of the disease), the deeper tissues, especially the intestine, liver, lungs, and other viscera, being most frequently affected.

In 1876, Bollinger recognised that the so-called osteo-sarcoma of the jaws of oxen was really due to a fungus, which Harz, from its morphology, named the "ray fungus," but as far back as 1845 Langenbeck described a fungus in connection with a case of caries of the vertebræ. In 1877, Israël described a case in man, but left it for Ponfick, in 1879, to demonstrate that the affection in man was identical with that in animals, as described by Bollinger. Majocchi was the first to describe its occurrence in the skin. He divides cases into **anthracoid** and **ulcero-fungoid**. The fungus gets into the tissues generally by the mouth, especially along carious teeth; by some other portion of the digestive tract; or by the air passages. The lesions excited by its presence usually reach the skin in some part of the face and neck, rarely affecting the chest or abdominal walls from the viscera. Only in a very few instances, has there been proof or reason to believe that the skin has been primarily affected from without through some abrasion of its surface, and the hand has been thus affected, but usually it is the face or neck even then, the special Indian form, mycetoma, being of course excepted. From the time of entrance of the fungus to its appearance on the surface, many weeks, months, or even years may elapse. In secondary involvement of the skin, the lesions produced are remarkably like those of scrofuloderma, for which they have often doubtless been mistaken. The deep-seated actinomycetic tumour enlarges, suppurates, and as it approaches the surface the skin becomes red, livid, thinned, and undermined by suppuration, and fluctuating tumours are formed over the affected area, often with little or no pain, but pain, even severe, may be present; and then the skin at last gives way, either at one, or more often at several fistulous openings, a sanguineous serum or purulent fluid containing the characteristic yellow granules being discharged.

If some of the pus is collected in a test tube and held up to the light, they appear as brownish or greenish-brown granules embedded in muco-purulent matter. They are from a small to a large pin's head in size, sulphur yellow by reflected light, and greenish-yellow or brown by transmitted light. The microscopical appearances will be presently described.

In exceptional cases, there is persistent board-like infiltration without any softening or breaking down, or the induration may gradually subside without treatment. In Darier and Gautier's case, a woman, æt. twenty-five, nearly the whole cheek was occupied by a red nodular swelling, crusted in some places. The nodules, some of which were a third of an inch in diameter, were on a hard base, and some suppurated and broke down. The part was tender, but not otherwise very painful. As the clinical characters were not those of cancer, glanders, syphilis, or lupus, the pus was microscopically examined, and actinomyces found. Morris's case resembled the above, but was attended with great pain; both represent the anthracoid type.

Pringle's case on the back represented the ulcero-fungoid type; there were enormous fleshy sarcomatous-looking outgrowths of mottled purplish and yellow colour. As he describes it—"All the growths feel pulpy and fluctuating, and are not tender. Each growth presents at least one, usually several small crateriform ulcerative openings, from which a clear rather sticky fluid constantly exudes. In each of these ulcerative surfaces, there is an accumulation of purulent fluid of pale yellow colour, which is seen to contain innumerable tiny granular specks. There are also pigmented sunken scars, the remains of previous lesions." In man, with rare exceptions, the bones escape, unless there is secondary pus cocci invasion, while in animals, the bones are always involved from the first. On the other hand, suppuration is absent in animals, while it is the conspicuous feature in man, although the amount in each focus is small. The openings are usually external on the cheeks. The course of the disease is, as a rule, chronic, with exacerbations, but it is occasionally acute, and the disease spreads both continuously and by metastasis.

In the temporo-maxillary form great pain, and even trismus, may precede the tumour development, which, before the nodular development, is smooth and hard, but elastic, and the true nature of the disease would scarcely be recognised at this stage.

Though, according to Poncet, the character of the pain which comes on at night, the early trismus often preceding the pain, the wooden hardness of the growth, and the absence of glandular enlargement are characteristic, the acute cases may resemble angina Ludovici, and may be fatal in a week. Chronic cases are fatal by extension to vital parts, such as the brain, lungs, or

heart chiefly, where the disease has been allowed to run its course without recognition, or before the iodide of potassium treatment was known.

Etiology.—Males more than females are affected, on account of their employment, and the majority have been young adults, but five years and sixty-five have been recorded. Although there is some evidence that the fungus is often derived from corn or hay, there is no definite proof yet of its origin. Some have had to do with cattle or horses, others have been in the habit of chewing straw or raw corn, and chewing malt appeared to be the cause in the case of Carless, but in many, neither occupation nor other circumstances have suggested the mode of origin. In exceptional instances, it may be directly communicated. Baracz of Lemberg reports the case of a cab-driver, in whom a tumour the size of a walnut formed over the left lower jaw, after the extraction of a tooth; an incision was made into the tumour, and the pus examined showed the ray fungus; shortly afterwards this man's *fiancée* came under observation with a similar but softer alveolar abscess, which also contained the fungus. Murphy of Chicago had a case in which the lower jaw of a woman was affected, and the history showed that her pet dog had died shortly before with a large swelling of the lower jaw.

Poncet and others have reported similar cases of transmission from animals. In Müller's case, a woman ran a splinter into her finger, and two years later an actinomycetic tumour formed at the site of injury, and the chip of wood was found in it.

Guillemot's case was similar; a blow on the face with a piece of wood was followed in a few weeks by a tumour on the injured spot. It has also been attributed to meat and milk from infected animals, and other articles of food, such as potatoes, have been suspected.

Pathology.—It has already been explained that the disease is due to the inflammation excited in the tissues by the ray fungus; it only remains, therefore, to describe its morphology.

Anatomy.—The yellow granules above described have a centre consisting of a mass of finely interwoven threads, from which others, equally fine, radiate and constitute the greater portion of the nodule. These threads, either singly, or after dividing dichotomously, swell out at their ends into club-shaped bodies, which being situated at the periphery of the mass, give it an irregular mulberry appearance. There is reason for believing that the central threads are the mycelium, and the club-shaped bodies the

fructifying portion of the fungus, but the latter point is not yet definitely proved, as they are not found in artificial cultures.

Crookshank * describes the history as follows:—"The spores sprout successively into excessively fine straight or sinuous, and sometimes distinctly spirilliform threads, which branch irregularly, and sometimes dichotomously. The extremities of the branches develop into club-shaped bodies, but it is difficult to say what further changes occur in them."

He thinks the fungus belongs to the basidio-mycetes. Crookshank recom-

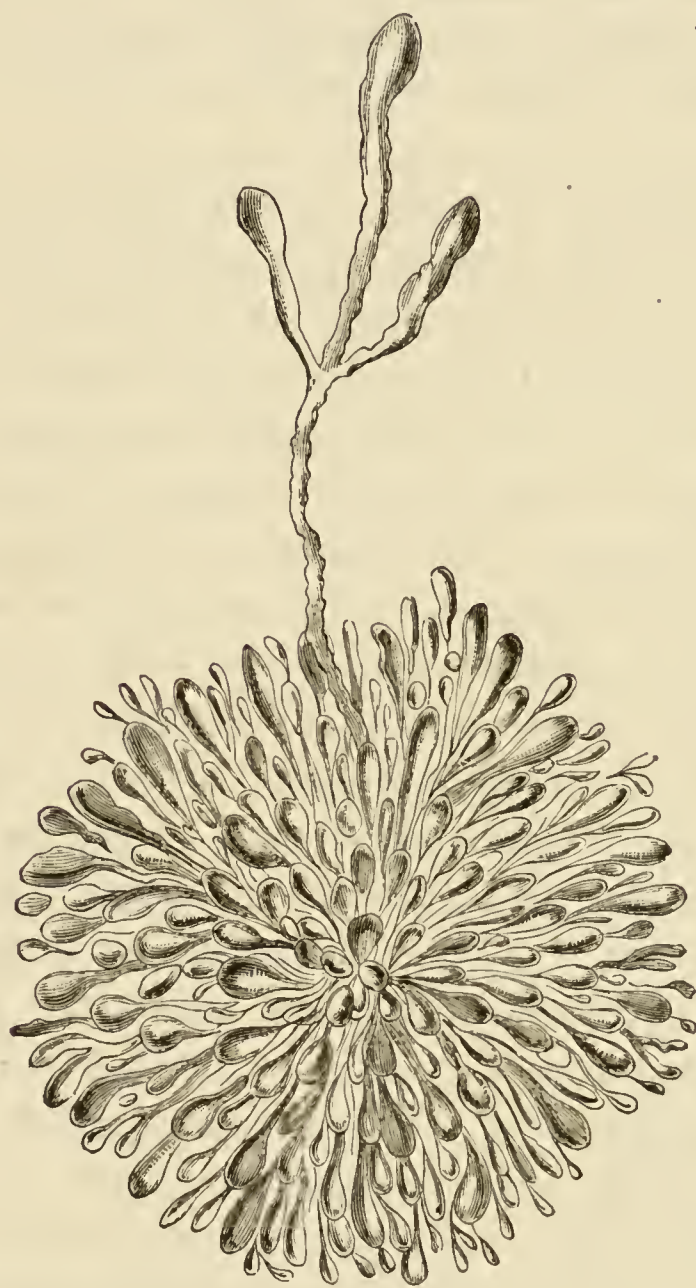


Fig. 99.—A mass of actinomyces, showing the ray arrangement, the club-shaped bodies, and a thread of mycelium extending beyond the mass and after division expanding to form clubbed ends (after Ponfick). The appearances depicted can only be seen by focussing up and down, so as to bring the several planes successively into view.

mends that the granules should be examined as follows:—When simply transferred to a slide, and a cover-glass applied without pressure, with a one-inch objective, they appear as spheroidal masses of a pale greenish colour; on gently pressing the cover-glass, they separate into characteristic wedge-shaped fragments of a faint brown colour. With less pressure and

* *Lancet*, January 2nd, 1898, p. 11, with coloured plate of fungus and its cultures.

careful focussing with $\frac{1}{6}$ inch, rosettes of clubs can be seen, while the characteristic clubs come out best when a thin layer in a drop of glycerine is examined with $\frac{1}{12}$ inch. Permanent preparations in glycerine can also be made. The best methods for staining are by Gram's method and eosine or orange rubin. This stains the central core of mycelium in the club blue, and its mucilaginous sheath pink or crimson.

The threads in the centre of the granule are also differentiated into an external sheath and protoplasmic contents. While staining brings out small interesting points, it is not necessary for diagnosis. The fungus can also be cultivated in nutrient media, of which glycerine agar is one of the best, and inoculated into bovine animals, but rabbits and dogs are comparatively insusceptible.

Diagnosis.—Slowly developing, comparatively painless, suppurating growths, in circles, groups, or moniliform lines in an adult, especially if in the skin near the jaws, with yellow points under the skin, and a tendency to open in several places like a carbuncle, should excite suspicion, and lead to the examination of the pus for the characteristic sulphur-yellow masses which are the only sure sign of the disease. The absence of lymphatic enlargement and the age would be against scrofuloderma, few cases occurring in children, and the occupation connected with horses or oxen, or with dried cereals, might furnish a significant hint. That the actinomycetes are not readily found in all cases, Legrain's * case shows: the skin over the nodules was stretched and red, and small superficial abscesses formed in the neighbouring skin. On puncture, a hard zone was felt round them, but no fungus detected, but scrapings of an abscess inoculated under the abdominal skin of a rabbit produced a hard nodule, in which the ray fungus was found microscopically, and further demonstrated by successful cultivation in bouillon, gelatine, and agar-agar. The inoculation in a rabbit is noteworthy, as Ponfick considered them insusceptible. Other conditions besides scrofuloderma produce apparently similar lesions to actinomycosis.

Thus, in one of my cases, a farm labourer of middle age, there were closely aggregated nodular suppurating swellings all over the dorsum of one foot. Repeated microscopic and cultural examination showed only staphylococcus aureus, and persistent local disinfection of each lesion produced a cure; all the lesions were superficial. In another case I saw, a girl had an alveolar abscess which was followed by external suppuration, and it was treated before

* *Ann. de Derm. et de Syph.*, and abstract in *Brit. Jour. Derm.*, vol. iii. (1891), p. 395.

she came to the hospital by persistent poulticing. Under this, the whole cheek was covered with pea-sized suppurations, but my colleague, Victor Horsley, was unable to find the actinomycoses, either before or after scraping away the unhealthy granulations.

The resemblances and differences from sarcoma need not be further alluded to. Syphilitic gummatous infiltration might also be mistaken for it, and the effect of iodide of potassium would only confirm an erroneous view of specific origin of the lesion. Apart from microscopic examination, an important difference is that in the early stage of suppuration, the pus of actinomycosis is thin and scanty, while that from syphilis is thick and often abundant.

Its production of perityphlitis and other visceral conditions need not be gone into here. Under Mycetoma the clinical appearances are contrasted with that analogous disease.

The *prognosis* is good when there is early recognition, so that iodide of potassium can be effectually administered, or if the lesions are situated in a position where removal can be effectually accomplished, but it is ultimately fatal if left to itself.

Treatment.—The discovery that iodide of potassium is almost a specific has almost revolutionised the treatment and prognosis of actinomycosis. It was first given for the disease in cattle, Thomassen having cured eighty per cent.; Morris's is a good case in point for the human subject. The treatment was begun six weeks after the appearance of the first lesion, during which time there had been rather rapid development, extending over the angle of the mouth, over the lower jaw, nearly to the ear; fifteen (afterwards increased to thirty) grains of iodide of potassium were given three times a day, and in ten days, only traces of the fungus could be found, in three weeks, the growth was only half the size, and in less than three months, had disappeared. The iodide was continued for three months longer, the patient remaining well. It is noteworthy that for the first three days of treatment the pain and discharge were increased, and then rapidly abated. The treatment may, however, fail if suppuration has already occurred or has spread to important parts, such as the base of the brain; some of Ransom's * cases may be referred to in this connection. It is said also that it does not destroy the fungus, but only the granulation tissue in which it is imbedded, and so if there is an external opening it permits the fungus to be discharged. It also very much diminishes

* *Brit. Med. Jour.*, June 27th, 1897, p. 1553—eight cases, one of orbit.

the extent and severity of an operation if one should be ultimately required.

Locally, the treatment consists in the early opening of abscesses, laying open sinuses, scraping out the diseased tissues, removing affected bone, and syringing thoroughly with antiseptics, such as iodine, one in a thousand or stronger of perchloride of mercury, or with carbolic acid. Rydigier treated two cases successfully with parenchymatous injections of iodides—a one per cent. solution of sodium iodide appeared the best ; some local reaction ensued on the first injections. Accessible disease should be attacked at once by surgical means without waiting to see what the iodides internally will do.

MYCETOMA.*

Synonyms.—Fungus foot of India ; Madura foot ; Podelcoma ; Ulcus grave ; Tubercular disease of the foot.

Definition.—An endemic disease affecting the foot or hand, attended with disintegration of the tissues, probably due to a variety of ray fungus.

The earliest notices of the disease, according to Manson, are due to Kæmpfer (1712), Godfrey of Madras (1843), Balingall (1855), and Eyre (1860), but Vandyke Carter's papers and masterly monograph (1874) form the foundation, and most of the superstructure, of our present knowledge.

There are three varieties, the pale, the black, and the red, the pale being the most common, while the red is very rare. In the vast majority of cases the foot or leg is attacked, but sometimes it affects the hand, and in rare instances the shoulders, sacro-iliac joint, knee, ankle, and scrotum. The neck and abdomen are also on record.

Symptoms.—In a fully developed case, the foot is much swollen and distorted, the arch being broken down, and the toes forced

* *Literature.*—Vandyke Carter, *On Mycetoma, or "Fungus Foot of India"* (Churchill : London, 1874), with many coloured plates. Tilbury Fox, 3rd ed., p. 468. *Skin Diseases of Parasitic Origin* (Hardwick), p. 62. *Endemic Skin and other Diseases of India*, Fox and Farquhar's Report, p. 42, Appendix I., p. 18, Appendix IX., p. 215. *The Fungus Disease of India*, Lewis and Cunningham's Report, Calcutta, September, 1875. Crookshank's *Bacteriology*, 4th ed., 1898. "Mycetoma as it occurs in America," Nevins Hyde and Senn, *Jour. Cut. and Gen. Ur. Dis.*, January, 1896, gives bibliography of modern researches. Manson, *Tropical Diseases*, 2nd ed., 1900, gives good *résumé*.

apart and over-extended, so that the sole is convex from behind forwards. All over the surface are numerous pea-sized mammillated eminences, in the centre of which is the orifice of a sinus leading to a cavity situated at various depths in the foot substance, and giving exit to a thin sero-purulent discharge, containing rounded granules, like "fish-roë," of a greyish or yellowish colour, or smaller black particles, or the granules may be aggregated into pea-sized masses. In rare instances, the granules are pink or reddish in colour. These granules also stud the surface of the eminence round the sinus.

The disease appears to be superficial at first, and may attack only a toe or finger, but the mode of commencement varies. In some cases, there is at first very little swelling or alteration in colour, except perhaps slight congestion; in others, there may be a local induration or a papule, pustule, or nodule, either superficially or deeply seated, at some part of the foot, firmer, larger, and more diffused and less painful than a boil, which, when opened, discharges ordinary pus at first, but later on granules like poppy seeds, or the peculiar black material to be presently described, mingled with the discharge. In other cases, there is a blackish or bluish mottled discoloration like tattoo puncta, before any wound of the skin appears.

Course.—The disease progresses so gradually that it takes several years for the whole foot to become disorganised, though it is generally useless for progression after a year or two, but its course and duration are very variable. Cases have been recorded lasting as long as twenty-six or even thirty years; and, on the other hand, a considerable portion of the foot is sometimes involved in the course of a year or less, but three to seven years is a common period. In some instances, the tumour is very large, increasing the bulk of the foot to four or five times the normal size, while the leg wastes and increases the contrast. Sometimes the disease spreads upwards to the ankle or even knee, and it has been known to commence in the knee. As a rule, it is not painful, but its bulk and shape interfere with walking.

Etiology.—The disease is endemic in certain parts of India, especially in Madura, but is not limited to any particular soil or geological formation. It has also been observed in Constantinople, Senegambia, Cochin China, Africa, Syria, and rarely in Italy, the United States, and Canada, Guiana and Chili. It is far more

common in males than females, and may occur at all ages, though it is rare below puberty. A history of a previous attack of guinea-worm disease is present in a good many, but no etiological connection can be shown. It appears to be more common in those who work barefoot in the fields.* Not infrequently, the disease is said to date from an abrasion or other slight injury, especially the pricks of thorns, and Bocarro states that the thorns of acacia Arabica have been found in the diseased tissues, but equally often, the origin is quite obscure.

Pathology.—Vandyke Carter long ago found a fungus in the black variety, which was named after him *Chionyphe Carteri*, and to which he attributed the disease; but as none could then be found in the pale form, it remained doubtful as to whether it was the true *materies morbi*. In 1886, he pointed out, as Ponfick had previously done, how much mycetoma clinically resembled actinomycosis hominis. Since then, owing to improved methods of staining fungi, this conception of their relationship, if not identity, may be considered as proved, thanks to the researches of Crookshank, Kanthack,† Hewlett,‡ Boyce§ and Surveyor, Vincent, || etc.

Clinically there are several important differences between mycetoma and actinomycosis hominis as seen in Europe; viz., actinomycosis is almost unknown in India, and mycetoma in Europe. Mycetoma is invariably a chronic local disease; the internal organs are never affected; the constitutional symptoms are always very slight; it never attacks the cervical and thoracic regions, which are the favourite seats of actinomycosis; the sulphur-coloured bodies of actinomycosis have never been detected in mycetoma; nor have the black, red, and pale varieties of mycetoma been found in actinomycosis.

The general opinion now is that the pale variety contains a ray fungus, but whether identical with the European actinomycosis or not cannot be proved, as the pleomorphism of that fungus is well known; sometimes mycelium only is present, at others only clubs. Surveyor and Boyce have shown that the mycetoma fungus grows exceedingly slowly in a hydrogen atmosphere, while actinomyces grow rapidly; moreover, the mycetoma prefers vegetable

* Legrain found the pale variety only, in Kabylia, in Algeria.

† *Path. Trans.*, vol. xliii., 1893, and *Lancet*, July 16th, 1892.

‡ *Ibid.*, July 2nd and August 27th.

§ *Brit. Med. Jour.*, September 22nd, 1894.

|| *Annales de Derm. et de Syph.*, vol. vii. (1896), p. 1253.

to animal media. With regard to the black variety, the fungus most readily found appears to have the characters of an aspergillus with coarse septate mycelium, but having regard to the clinical resemblance of the black and white varieties, it has been suggested that there has been a mixed infection the ray fungus being obscured by the aspergillus. Vincent cultivated a new fungus and called it the streptothrix maduræ. The best medium is a two per cent. infusion of hay; or potato 100, gelatine 9, glycerine 4, grape sugar 4. Kanthack says that he has found some ray fungus amongst the aspergillus form of the black variety, and that there are transition forms between the pale or perfect type and the black degenerated or structureless type. The association of the black and white granules in the same case is rare, but has been noted by Lewis,* Cunningham and Boccaro. The disease cannot be proved to be transmissible to the lower animals by inoculation of either Vincent's streptothrix or of the mycelial fungus found in the black variety.

To see the fungus, Kanthack's plan is to soak the tissue in æther or chloroform, and wash well in caustic potash, when small round bodies are left in, with rays which appear and stain like those of actinomyces. Hewlett recommends the Ehrlich-Biondi stain.

Boyce and Surveyor used the following method for the black variety. Boil the particles for a few minutes to one hour in concentrated caustic potash, then transfer to distilled water, when a mycelial fungus could be seen. Or decolorisation may be effected by washing the tissue for a minute with eau de Javelle, and then it may be stained as for actinomyces.

Anatomy.—On making a longitudinal section of a Madura foot in an advanced condition, the limb is found to be tunnelled in all directions by sinuses, which may pierce the bones even, and lead to spherical cavities, either single and blind at one end, or compound and communicating with other cavities and sinuses. The whole segment of the limb is softened from fatty degeneration.

The single cavities may or may not be superficial; the compound ones are deep in the foot substance, and may be either in the bones or soft parts, and ramify in every direction. The cavities and channels are lined by a fibrous membrane, and contain granules, separate or aggregated into mulberry-like masses, compared to fish-roe; these may be whitish-yellow, brown, or black, and in rare instances, are red, abundant in the discharge, and not only occupy the cavities, but the sinuses, studding the surface of their walls.

The differences between the black and pale varieties appear to be in the presence or absence of this black material, and in the fungus elements in the tissues and in the discharge.

The tissues of the foot are much altered, so that there is a general confusion of parts, owing to absorption of the bones and fibrous tissues, and thickening of the soft parts. The muscles are the least altered, and in some cases, the bone substance remains healthy all round the channels with which they are pierced, while, on the other hand, the bone substance of the tibia and fibula has been found softened when the limb has been amputated apparently well beyond the disease. Cunningham attributes most of these changes to

* Crookshank, *Bacteriology*, 4th ed., gives a more detailed review of the whole evidence; also in *Lancet*, January 2nd, 1897, p. 17.

a peculiar endarteritis obliterans, the fungus being, he thinks, a secondary invasion, especially as in some cases, the clinical appearances are classical, but there are no fungus elements to be found.

Diagnosis.—When once the sinuses are formed, and the discharge of the pale fish-roë or black gunpowder-like material has ensued, there can be no difficulty in diagnosis. And the black granules under the skin before ulceration has occurred are almost equally suggestive. In the early stage, when it commences with a vesicle or pustule, the idea of the presence of the *guinea-worm* may suggest itself; but when the abscess and sinus form, the diagnosis is cleared up, except where the two parasites co-exist.

Prognosis.—Spontaneous recovery is unknown. The disease is slowly progressive, until complete disorganisation of the tissues is produced, and the patient is encumbered with a bulky and useless limb.

Treatment.—Only complete removal of the diseased tissue is of any avail. In the early stage, if the affected area is superficial, scraping with a sharp spoon may be successful, or the removal of a finger or toe, while the disease is limited to it, may suffice; but when advanced, amputation of the limb, well above the diseased area, is the only course. The analogy with actinomycosis suggests the administration of iodide of potassium, in intermediate cases.

BLASTOMYCOSIS.*

Definition.—Miliary abscesses in the skin, due to the presence of blastomycetic elements, leading to granulomatous ulcerative lesions with papillary outgrowth.

Gilchrist in May, 1894, and shortly after, Buschke in Busse's case, were the first to find the organisms in the pus and sections of the skin; but Busse, six months later, was the first who showed their significance, and that the disease was due to the invasion of the tissues by saccharo-mycetic fungi.

Buschke inoculated Busse's patient and reproduced the disease with acne-like nodules going on to crateriform ulcers.

The clinical and pathological features have been further worked out chiefly in America, where most of the cases have been observed

* There is a good article of Gilchrist's in *Reference Handbook of the Medical Sciences*, 1901, p. 412, from which I have largely quoted. There is full bibliography to 1900, inclusive, and still later in *Brit. Med. Jour.*, Oct. 25th, 1902, p. 1321, with illustrations.

by Gilchrist, Curtis (in France), Wells, Hessler, Brayton, Hyde and Hektoen, Hyde and Ricketts, Montgomery and Ricketts, Stelwagon,* etc. A doubtful case has been reported by Azua of Madrid. No case has been hitherto recognised in England, so I give the following description partly in the words of Gilchrist, supplementing them with Hyde and Montgomery's observations, as they have most studied the disease, no less than eleven cases having occurred in Chicago.

Symptoms.—The initial lesion is a split-pea-sized nodule, which after a time becomes pustular and breaks down into an ulcer. This extends in one or several directions, and others may form in the neighbourhood. As the ulcer enlarges, in nearly all cases there is papillary growth, sometimes verrucose, sometimes fungating, in one case a cauliflower growth projected an inch. A thin mucoid discharge, often offensive, is usually present, or this may be temporarily stopped by the scabbing over of the lesion, but the scab is soon thrown off, and the thin pus discharges, or can easily be squeezed out from between the papillæ. In this pus, the blastomycetes can easily be found by the addition of a little liquor potassæ as doubly-contoured refracting budding bodies. In many cases, pus cocci are also present, but these can be eliminated in cultures by Hektoen's method of adding a weak solution of potassium iodide to the culture medium, which kills the staphylococci and leaves a pure culture of the fungus; but the fungus is pyogenic, as pure cultures can often be obtained from the pus without this. The diseased patch always has a well-defined raised edge, is only slightly infiltrated, for the lesion is always superficial, and in very chronic cases, there is a certain amount of healing with atrophic scarring.

The general aspect is that of a scrofuloderma with papillary growth, or of lupus verrucosus; cases like yaws (Dyer) and lupus vulgaris (Gilchrist, Stokes) have also been observed. The lesions are usually multiple, as the patient inoculates himself from one

* In *Amer. Jour. Cut. Dis.*, vol. xix. (1901), January No., are cases by Dyer, Montgomery, Hyde and Ricketts, with numerous illustrations. A corrected table of cases by Hyde is in March No., p. 129, also a case by Brayton and Golden, p. 152. Stelwagon, *Amer. Jour. Med. Sci.*, February, 1901, adds another case. Also J. Méneau, "Sur la Blastomycose Cutanée," *Annales de Derm. et de Syph.*, vol. iii. (1902), p. 577. Full abs. *Brit. Jour. Derm.*, vol. xiv. (1902), p. 393. A good general review and bibliography. A. Buschke, "Die Blastomykose," *Bibliotheca medica*. (Erwin Nägele, Stuttgart: 1902.)

place to another. It chiefly affects the face, hands, and neck, *i.e.*, the uncovered parts, but the thigh is also a common starting-point, and no part is exempt; it may extend indefinitely. One case (Anthony Herzog) lasted twenty years, and involved almost the whole left extremity, without affecting the general health and with very little pain, but secondary septicæmia and tuberculosis have occurred. In only two cases, has there been glandular enlargement, and in Coates's case, it was probably from another cause.



Fig. 100.—Blastomyces. \times about 800. “Drawn from a series of sections of a piece of tissue from a case of blastomycetic dermatitis (*‘coccidioides’*), for which I am indebted to Dr. Howard Morron of San Francisco. *a*, Blastomyces, with central granular portion; *b*, budding cell; *c*, cell dividing by segmentation; *d*, budding of the fungus. This appearance was only found in one section, and rarely occurs in the tissue; *e*, giant cell formation around blastomycetes; *f*, infiltration of plasma cells and leucocytes.” (From Macleod's *Pathology of the Skin*.)

Pathology.—The disease is due to the presence of blastomycetes* in the skin. These set up miliary abscesses in the epidermis and

* Gilchrist, Stokes, Curtis, Hyde and Hektoen, Montgomery and Ricketts have inoculated animals, and have produced lesions from which the fungus has been recovered and cultivated. The organism grows in all ordinary media, but especially well on potatoes and beer-wort agar.

upper part of the corium, and in these the fungus elements* can be found, usually in budding pairs, but also singly and in groups. Secondary changes are :—In the epidermis, more or less destruction of the horny layer; enormous overgrowth of the prickle-cell layer with branching downgrowths; in the corium, there is infiltration with leucocytes, endothelial and plasma cells. In sub-acute cases, there are giant cells, and in chronic ones, there is a pseudo-tuberculous structure. Buschke says that all the changes are of inflammatory origin.

Diagnosis.—Hyde and Montgomery say that the diagnosis of blastomycosis and lupus verrucosus can only be made with certainty by the microscope and cultures, but in general, that lupus verrucosus is slower of evolution, more often limited to small areas, has a more distinct violet halo, and is more often about the lower forearm and ankle.

It closely resembles so-called protozoic infection, which is a variant of blastomycosis.

It may have to be distinguished from lupus vulgaris, lupus papillomatosus, and other vegetating forms of disease, syphilitic or otherwise, including yaws, and from epithelioma. If the possibility of this disease be borne in mind, the microscope and cultures will be decisive.

Prognosis.—In only one case hitherto, that of Busse-Buschke, has it infected any other organs than the skin, and that case was fatal. Montgomery also had a fatal case which had been diagnosed as acute miliary tuberculosis. On the skin, if allowed to go on unrecognised, great destruction and disfigurement may be produced, but it is fairly amenable to treatment. It may go on for an indefinite time.

Treatment.—Bevan has discovered that blastomycosis, like actinomycosis, is amenable to large doses of iodide of potassium, but Hyde says that, although great improvement occurs, perfect cure is seldom obtained. Méneau thinks there are two classes of

* Hyde and Montgomery recommend methylene blue as the best stain, but the fungi can be easily seen in sections stained with hæmatoxylin and other common stains. They are seldom intracellular. They form round, oval, or slightly irregular bodies with a well-defined, double-contoured, homogeneous capsule, and a finely or coarsely granular protoplasm separated from the capsule by a clear space. Mature organisms have a diameter of from $7\ \mu$ to $20\ \mu$, though smaller and larger organisms are seen occasionally. Budding forms in all stages and organisms in unequal pairs are always to be found.

cases, *a*, those due to a yeast, and *b*, those due to a mould fungus. The yeast cases run a more rapid and virulent course with abundant organisms, but are more amenable to iodide of potassium than the mould form. Small areas may be excised and large ones curetted, and Gilchrist recommends that nitrate of silver should be applied after curetting.

A closely allied fungus disease was described first by Wernicke* of Buenos Ayres in 1890, and then by Rixford and Gilchrist, and was thought by these observers at first to be a coccidial disease and called **protozoic dermatitis**. Ophüls and Moffitt, however, have shown that it is due to fungus elements very like those of blastomycosis.

Only six cases were known up to 1902, and all had been fatal, internal organs having been affected. All were men, and four had lived in adjacent valleys of California, Santa Clara, and Jonquin. Two have been in Buenos Ayres. The origin has not yet been traced. In the skin, the resemblance of the lesions to those of blastomycosis is very close.

Clinically, there are papillomatous and verrucose lesions (not in Ophüls and Moffitt's case) from which pus can be squeezed out, and, *pathologically*, "there were the typical marked epithelial hypertrophy; the numerous miliary abscesses in which the organisms are present, and the tuberculous-like formations in the corium as well as the numerous plasma cells" (Gilchrist). He also says that the protozoa-like bodies developed by sporulation, the organism dividing up gradually into about one hundred spores, which were liberated by the bursting of the capsule.

Ophüls showed that when animals were inoculated with the fungus, the sporulating forms were reproduced, and from them, in a hanging drop of bouillon, mycelium was developed. In brief, it appears that the two conditions are due to the same organism, but that in blastomycosis multiplication is by budding,

* Wernicke, R., Translation from *Buenos Ayres Jour.*, 1890, in *Jour. de Micrographie* (Paris: 1891), vol. xv. *Centralbl. f. Bact. u. Parasit.*, vol. xii., 1892. Trans. Other references are:—Rixford and Gilchrist, Reprint from *Johns Hopkins Hospital Reports*, vol. i., 1896. A highly illustrated and valuable monograph on this and blastomycetic dermatitis. Posados, A., *Psorosporismosis Infectante Generalizada*, Buenos Ayres, 1897-1898. Montgomery, D. W., *Brit. Jour. Derm.*, vol. xii. (1900), p. 343, with good photograph. Full references to date. Ophüls, *Phil. Med. Jour.*, 1900. Seeber, G. R., *Thesis, University of Buenos Ayres*, 1900.

and the lesions are limited to the skin, while in the so-called protozoic dermatitis, multiplication proceeds by sporulation and visceral implication may follow with fatal results.

No treatment hitherto employed has appeared to have any effect on the fatal progress of the disease. Iodide of potash and mercurial inunction were both well tried in Montgomery's case without any visible result.

Sporothrix. Species of this organism are said by Schenk and Hektoen,* and by Perkins,† to have produced obstinate cutaneous abscesses in two cases, which started in the index finger, and produced subcutaneous nodules and abscesses along the lymphatics of the arm.

The **Papulo-Ulcerative, Follicular, Hyphomycetic** disease described by Duhring and Hartzell,‡ may also be mentioned here. The disease had been present for three years on the side of the neck of a lad of fifteen, and resembled "a mild expression of lupus verrucosus." There was also a slight development on the forearm. The patches were rounded or crescentic, made up of discrete and confluent papules, some scaly or crusted. Scarring was present in some places. Sections showed a cavity where a hair follicle had been destroyed containing mycelium and spores $\frac{1}{2500}$ of an inch in diameter.

I record the following case, in the hope that it may lead to further investigation on the part of those practising in China and similar climates.

A naval officer contracted the affection four years before I saw him off the China coast.

It consisted of raised brownish-yellow rings chiefly in the hairy parts of the face, but he also had a ring on the scalp over the ear and over the left scapula. I regarded it as due to a vegetable parasite, and anti-parasitic treatment kept it under, and some of the lesions had disappeared, but after two years' treatment there were still three rings. The hairs of the beard on the rings pulled out easily without root sheath, but no fungus could be discovered after repeated examination. Patrick Manson and the members of the Dermatological Society saw the case, and also thought it was due to a deep-seated vegetable parasite.

* *Johns Hopkins Hosp. Bull.*, December, 1898.

† *Jour. Exper. Med.*, vol. v. (1900), No. 1.

‡ *Amer. Jour. Med. Sci.*, March, 1895.

CLASS XI.

ANIMAL PARASITES OF THE SKIN.

THE most important animal parasites of the human skin, either from their frequency or the character of the lesions, are, in Europe:—The itch acarus; lice of the head, clothes, or pubes; bugs and fleas; and in tropical countries:—The guinea-worm, the chigoe, and mosquitoes. There are, however, a large number of other parasites which attack man more rarely. These have been divided by Geber, in his valuable article in Ziemssen's *Handbook of Skin Diseases*, into three classes.

I. Stationary parasites which prey almost exclusively on the human skin.

II. Temporary or occasional parasites: (*a*) sexually mature; (*b*) in their larval condition.

III. Accidental parasites which do not voluntarily attack man, but when on the skin, injure it from the instinct of self-preservation.

The following list is borrowed from his articles; but, long as it is, it is not quite complete:—

I. STATIONARY PARASITES.

Sarcoptes scabiei hominis, itch mite.

Demodex (acarus) folliculorum hominis.

Pediculus: (*a*) *Pediculus capitis*, head louse; (*b*) *Pediculus vestimenti*, clothes louse.

Phthirius pubis, crab louse.

Pulex irritans, flea.

II. TEMPORARY PARASITES.

1. In sexually mature condition.

Sarcoptes scabiei communis.

Dermanyssus avium, bird mite.

Ixodidæ: (*a*) *I. ricinus*, *reduvius*, ticks; (*b*) *Argas reflexus*, *Persicus*, *Americanus*.

Cimex lectularius, bed bug.

Pulex s. Sarcopsylla penetrans, sand flea.

Tabanidæ, horse flies; *Tabanus*, *Chrysops cœcutiens*, Pangonia.
 Culicidæ, *Culex pipiens*, *Simula colombacencis*, *S. pertinax*.
 Hirudineæ; *Hirudo medicinalis*, officin., and others, *Hæmataria Mexicana*.

2. In larval condition.

Cestoidea: *Cysticercus cellulosæ*.

Echinococcus, bladder worm.

Trematoidea: *Distoma hepaticum*, liver fluke.

Nematoidea: *Filaria medinensis*.

Filaria sanguinis hominis.

Oxyuris vermicularis.

Leptodera.

Muscidæ: (*a*) *Musca domestica*, *cadavarina*, *vomitaria*, and *Lucilia Cæsar*,
 (*b*) *Sarcophila Wohlfarti* (Portschinsky); *Sarcophaga carnaria*.

To these may be added *Lucilia hominivora* in America;
Stomoxys calcitrans; *Glossina morsitans*, known in Central Africa
 as tsetse, etc.

Æstridæ: *Hypoderma* (ver macaque in Cayenne), species of
Cuterebra; *Dermatobia* (*Æstrus humanus*, Humboldt); and
Gastrophilus.

III. ACCIDENTAL PARASITES.

Species of *Dermatodectes* and *Symbiotes* (Gerlach).

Leptus autumnalis, harvest bug.

Kritoptes monunguiculosis.

Clothilia inquilis, book worm.

SCABIES.*

Synonyms.—Itch; *Fr.*, Gale; *Ger.*, Krätze.

Definition.—A contagious disease due to an animal parasite, of the sub-order acarus, characterised by a special lesion due to the burrowing of the female, and by multiform lesions from scratching.

Scabies is an extremely common disease among the poor in England, and not rare in the better classes, constituting in my experience 8 per cent. in hospital, and 1·2 per cent. in private practice.

In Scotland it is still more common. McCall Anderson met with it in one-fourth of his hospital cases, and in 4·4 per cent. in private practice. On the other hand, it used to be comparatively rare in the United States, but has increased in a few years from

* Bourguignon Delafond, *Traité pratique d'entomologie et de pathologie de la Psore ou Gale*, 1862.

less than 1 per cent. according to the Dermatological Association statistics to 5.39 in 1891. White of Boston notes an enormous increase there, from nine cases in 1880 to 7.38 per cent. in 1891, while Stelwagon claims an even higher percentage for Philadelphia; in other cities the proportion is less. On the Continent it is very common.

Symptoms and Pathology.—The clinical picture of scabies is made up of two elements: the burrows, or cuniculi, and the attendant inflammation excited directly by the *acarus scabiei*; and indirectly, the lesions produced by scratching, and the modifying influences of pressure, friction, etc. The result is a great multiformity of lesions, which, combined with their distribution, is in itself suggestive of the nature of the disease, and enables a practised eye to detect a well-marked case at a glance.

In order to understand the process, it must be premised that the male wanders free on the surface or is entangled beneath the crusts, and, with the exception of impregnation, takes no part in the production of the disease, the female alone being responsible for all the symptomatic eruption. When placed on the skin, she burrows into it with her head, the bristles on her hind legs tilting her up, so that the head is inclined to the skin and penetrates below the surface, it is said, within half an hour. Then the impregnated female lays an egg, tunnels farther, laying one or two eggs almost every day, amounting to about fifty altogether, soon after which she dies, having lived altogether about two months. The ova take from five to fourteen days to hatch out; but the way the new-born *acarus* reaches the surface is not certain, the most probable being that, the burrow being oblique, and the oldest end being nearest the surface, in the natural course of exfoliation of old epidermis, the most mature ovum reaches the surface first; thus the young *acarus* gains its freedom, and is ready to commence a new life cycle.

The female selects generally the thinnest part of the skin, such as the web between the fingers and other parts of the hand, the flexures of the wrist, axillæ, fork, and penis, and other parts of the genitals; but in long-standing cases, among the unwashed, no part is exempt except the head and face, which are never attacked in this country, except in infants in arms. The marks of scratching are, however, much more general, and exist in all readily accessible parts. In men, the pruritic eruption is mainly on the

anterior surface, from the level of the nipple to the knees, and posteriorly, only on the buttocks. In women and children, the arrangement of their clothes allows them to get at the lower part of the back, and the signs of scratching there are as well marked as in front.

When the skin is first penetrated by the acarus, inflammation is often set up, and a papule, vesicle, or pustule is the consequence. These papules or small vesicles, individually indistinguishable from eczema vesicles, are the most common form of eruption, but the inflammatory symptoms are absent in many burrows. The tract extends and forms a sinuous, irregular, or rarely straight line, which in very clean people is white, but, as a rule, is brownish or blackish from dirt being entangled in the slightly roughened epidermis ; the length of these burrows is generally from an eighth to half an inch, but occasionally much longer, Hebra having noticed one four inches long. When a pustule is formed, part of the burrow lies in the roof, but the acarus is always well beyond the pustule or vesicle, or, if there is none, lies at the far end, and with a lens, may often be discerned as a white speck in the epidermis. The degree and number of inflammatory lesions vary much ; there may be no inflammation at all about many burrows, or the whole hand, especially in children, may be covered by pustules, vesicles, or papules, and indeed a pustular eruption on the hands is always strongly suggestive of scabies ; there is, however, *no grouping or arrangement of any of the eruptions, as in eczema, the lesions being scattered about irregularly.* It must be remembered that burrows are not always present, from various causes. If the disease is recent, it may not have got beyond the papular or vesicular stage, while in washerwomen, bricklayers, or others whose hands are constantly soaked in water or alkaline fluids, or who have to scrub their hands violently, the burrows become destroyed. The eruptions due to scratching have already been described in the description of the "scratched skin," and comprise excoriations, erythema in parallel lines, eczema, impetiginous or so-called ecthymatous eruptions and wheals, and the inflammatory scab-topped papules often left after the subsidence of the wheals, especially in children. In carmen, cobblers, tailors, and others who sit on hard boards for hours together, pustular and scabbed eruptions, situated over the ischial tuberosities, are so abundant and constant as to be practically diagnostic of scabies

in such people. Similar eruptions may be seen where there is friction from trusses, belts, etc.

Variations.—In a few cases, the vesicles and pustules on the hands are very like variola. In the variety known as Norwegian itch,* which is seen in its highest intensity in lepers, in whom the disease has been allowed to grow unchecked, and in people among whom washing is indulged in with the utmost caution, the lesions are not limited to any special regions, even the face becoming involved, and the number of acari is very great, owing to the protection afforded by the extensive crusting. The palms and soles are covered with thick and leathery crusts, with yellow horny outgrowths of epidermis; the nails degenerate, splitting, breaking, and shrivelling from damage to the matrix. On the face, ear, and scalp, the crusts are pustular, containing acari and their *débris* in great quantity, just like the mange or scabies of animals, especially that of sheep, camels, and rabbits.

In a young nodulated leper under my care, who sweated profusely for some months before his death, his limbs were thickly encrusted with an epithelial, mortar-like deposit, which was ascribed to the sweat disturbance. Scabies was never suspected, as the itching was never very great, and he had none of the usual signs; but when he died, I sent some of the skin to the pathological laboratory of University College, and Boyce discovered that the epidermis and encrustations were simply riddled with acari in all stages.

Children.—In infants in arms, the scabies eruption may be present over the face and scalp, from the child being held close to its infected mother; for a similar reason, burrows are often found on the hips and feet of infants, infected from the mother's hand. Acute inflammation is much more easily set up in children; consequently pustular eruptions are much more common and extensive, both directly due to the irritation of the acarus, and also from impetigo contagiosa (ecthyma), resulting from scratching; urticaria is also more easily excited.

Etiology.—The disease is always propagated by the deposition of an impregnated female upon the skin, but, as a rule, it is only after prolonged contact with infected people or objects, as in occupying the same bed, handling an infected person's tools, which are familiar examples; but I believe that it is very rare for ordinary

* *Syd. Soc. Atlas*, plate xxvii.

contact, like shaking hands, to be the cause of contagion. No age, sex, or condition is exempt from it, but dirty people are more liable to it, as the acarus has a better chance of burrowing before it is disturbed.

Anatomy.—The description of the animal is sufficient here. It must be remembered that an acarus is not an insect, but having eight legs, belongs to the sub-order acari of the class Arachnidæ.

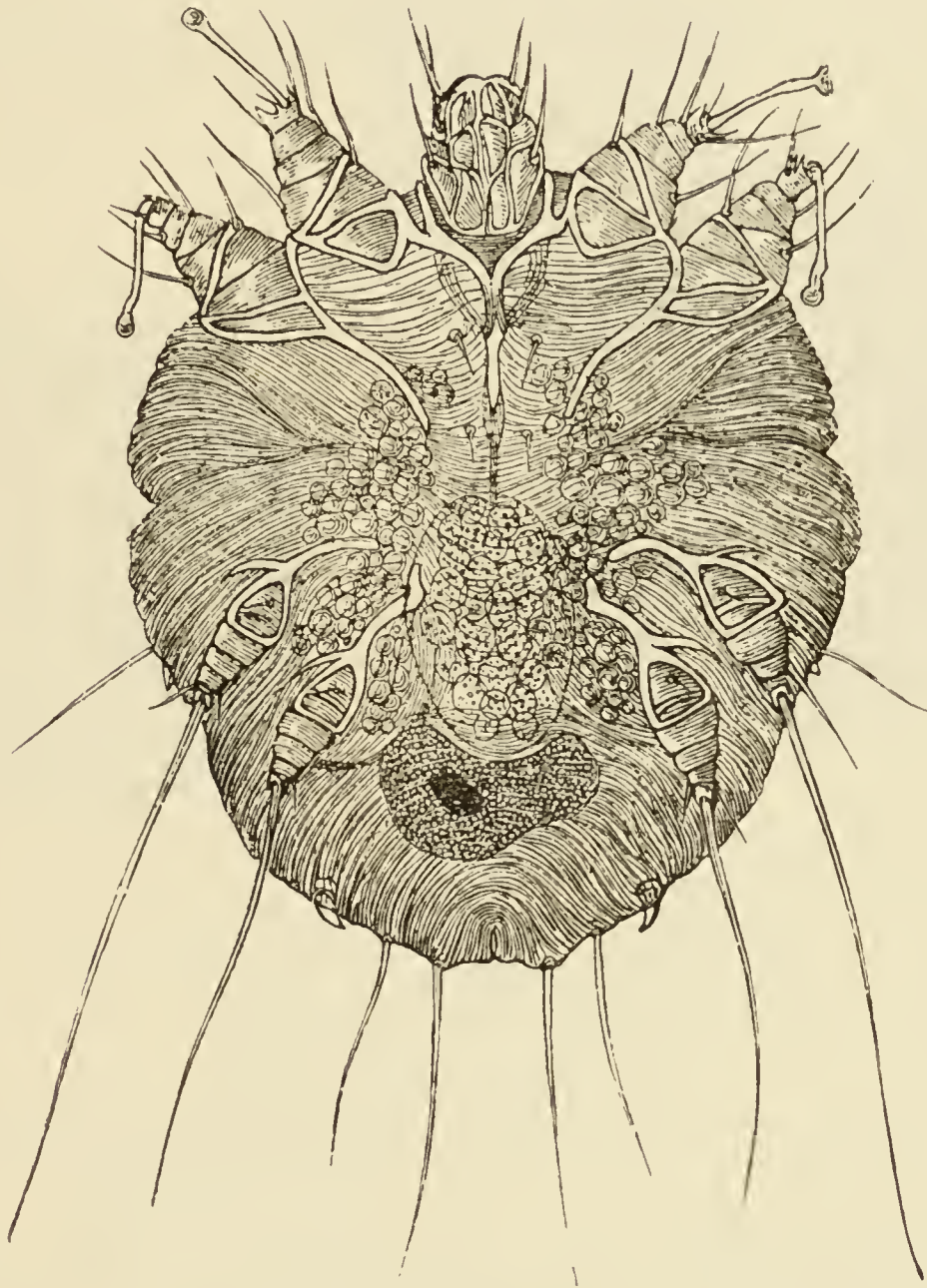


Fig. 101.—Mature pregnant female acarus. $\times 300$ (Kaposi).
In the interior of the abdominal cavity there is a mature ovum ready to make its escape.

The female is just visible to the naked eye as a minute, white, shining, roundish body, one-eightieth to one-sixtieth of an inch long ($\cdot 3022$ to $\cdot 4322$ mm.), and about two-thirds of its long diameter in width. Attached to its conical, stumpy legs are four suckers anteriorly and four setæ or bristles posteriorly, one to each limb; on the back, are numerous transverse striæ and serrated lines, with a few short, nail-like setæ; while on the under surface are the legs, a few setæ, and sometimes an ovum (fig. 101).

The male is about two-thirds the size of the female, has a small sucker

on each of the inner posterior pair of legs, for the purpose of copulation, and a well-marked genital organ, consisting of a chitinous framework, in the shape of a horseshoe, which supports the penis (fig. 102).

The larva has at first only six legs, and it is not until after its second or, as some say, its third moult that it is fully developed and has its full complement of eight legs; it, too, burrows a short distance while it is undergoing its moults (fig. 103). When a cuniculus is snipped out with scissors and examined, the ova are found in it in all stages of development, with fæcal and other *débris*, with the most mature ovum at the oldest end of the burrow and the mother acarus at the other (fig. 104).

Contrary to the usual statement, Török, who examined seven burrows,

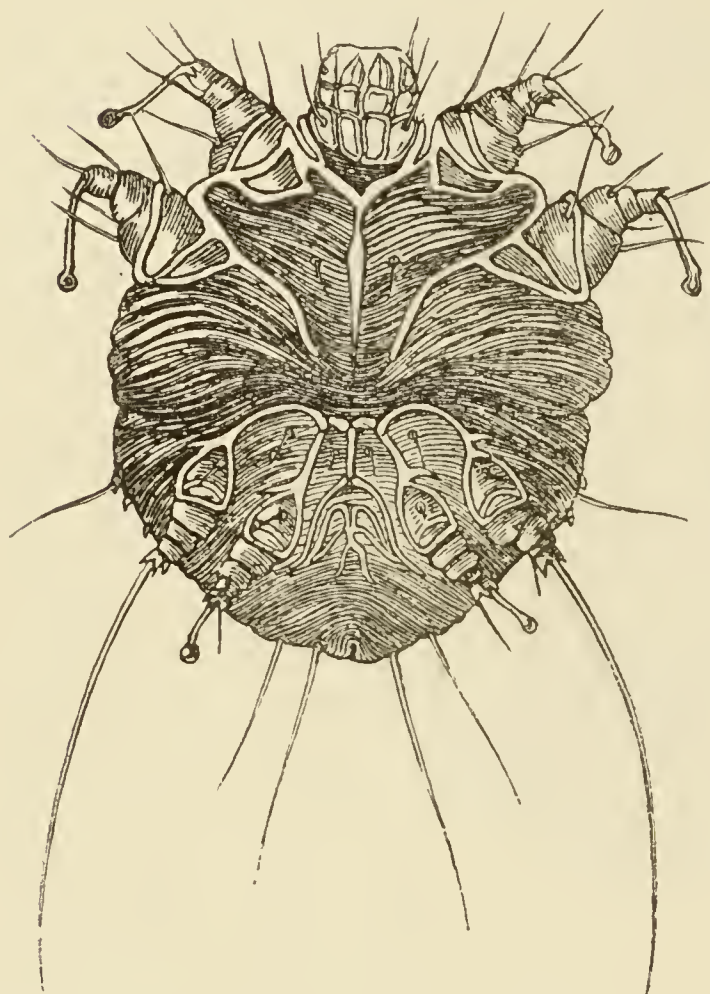


Fig. 102.—Male acarus. $\times 300$ (Kaposi).

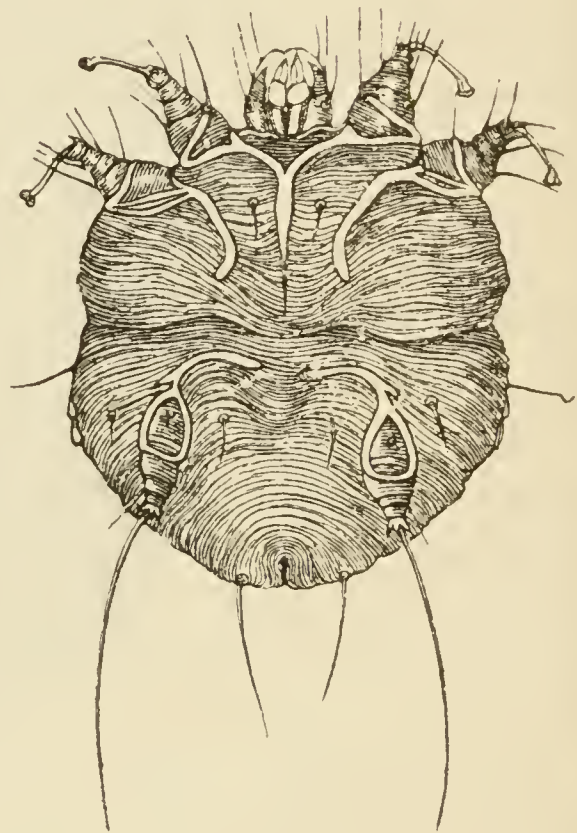


Fig. 103.—Larval acarus with only six legs and comparatively few bristles (Kaposi).

stated that the burrow was in the lowest part of the middle horny layer, and not in the rete. In the case of the leper before described, this was correct for the great bulk of them, but here and there one acarus among a score would be found in the upper part of the rete. Schiscka* states that, while the burrows are always in horny layers, when the skin is thin, the acarus penetrates to the rete, and that then cornification of the rete cells round the acarus immediately occurs, and thus the burrows are always surrounded by horny cells. The inflammatory papules are the result of the penetration of the acarus into the rete and the irritation they set up in the papillary layer.

Diagnosis.—The diagnosis of scabies may be very easy or very difficult according to the development of the disease and the

* Schiscka, *Archiv f. Derm.*, vol. liii. (1900), p. 3.

cleanliness, or otherwise, of the patient. In a well-marked case, the characteristic feature is the presence of papules, vesicles, or

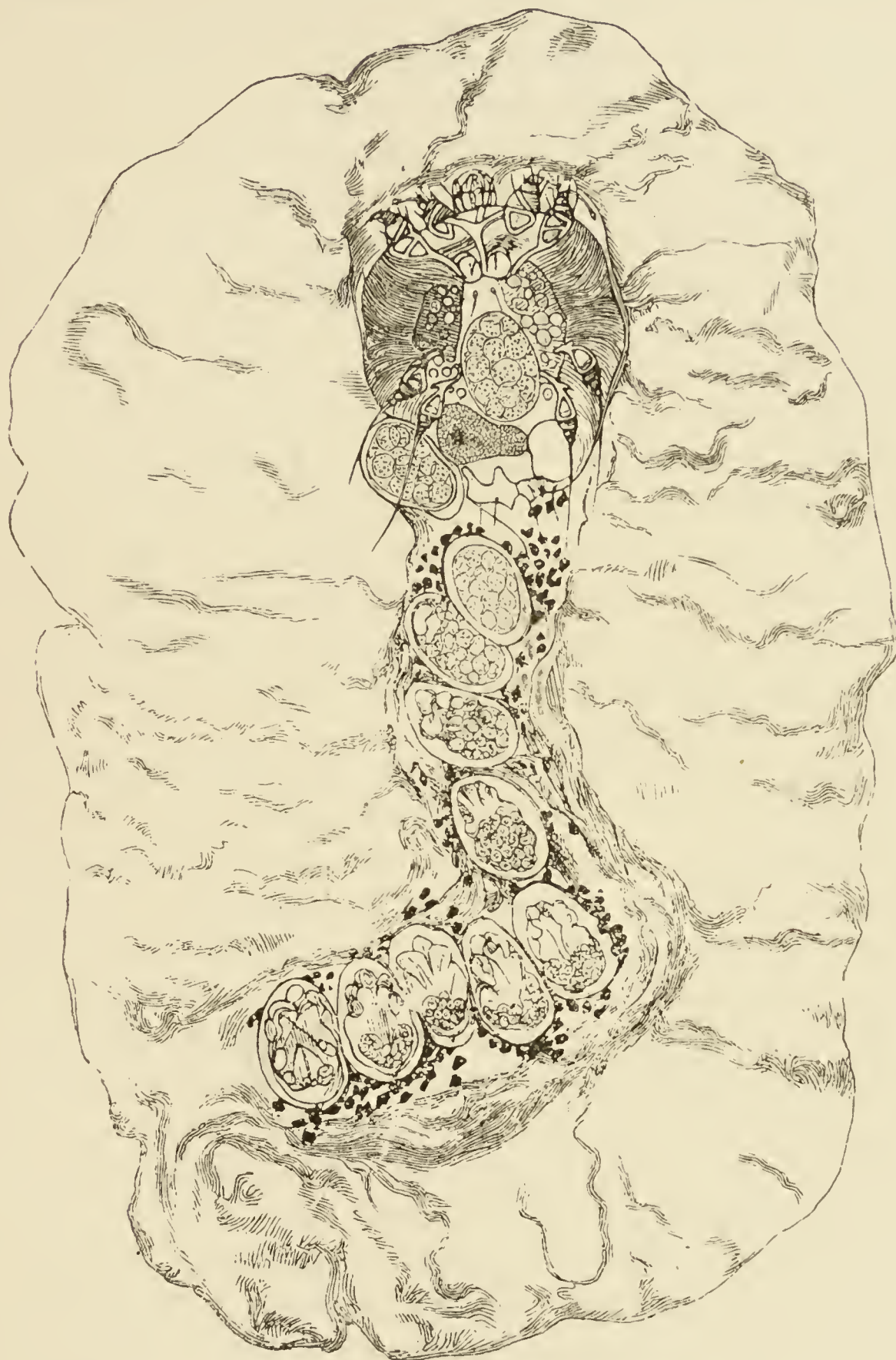


Fig. 104.—A burrow formed by an acarus within the epidermis, containing a female acarus with the head directed to the blind end of the burrow. In the acarus is an ovum. Behind the acarus, and in a row one after the other, with their long axis placed transversely to the long axis of the burrow, there are ten ova. In the three youngest of these the contents have already undergone subdivision. From the fourth to the tenth the progressive development of the young acari, in relation to the age, may be seen, beginning at the head, and, at the tenth ovum, the development is almost complete. Between the ova of the acari are black irregularly shaped faecal masses.

pustules, chiefly on the hands, wrists, and genitals, individually looking like *eczema*, but as a whole scattered rather than grouped, a very important point: *e.g.*, one or two vesicles only would be present on the web of the fingers in scabies, while in *eczema* there would be a patch of small vesicles. In such a case, close investigation would probably discover the characteristic burrow, and from this an *acarus* may be picked out by finding the more recent end of the burrow, from its being a little redder, and then with a needle the epidermis may be broken over the little white speck, and the point inserted, when the *acarus* generally clings to it. A good place to hunt for the burrows is the inner border of the hand, the fingers, and the body of the penis. If the patient is a male and can be stripped, the distribution of the scratch-marks, mainly from the level of the nipple to the knees, and the *ecthymatous* pustules on the buttocks, of those who sit on hard seats, are equally suggestive of scabies, and in a general survey, the multi-form character of the eruption ought to excite suspicion.

Prognosis.—Scabies is always easily curable if sufficient precautions are taken against reinfection.

Treatment.—The treatment is simple and effectual, but requires a little care in its performance, something more than a prescription being necessary. There are two evils to be avoided: treating the patient too little and treating him too much. In all cases, it is necessary to open up the burrows; to do this, the patient should be well soaked in hot water for twenty minutes, soaped thoroughly, preferably by rubbing in soft soap, if the skin is not too delicate, and then scrubbed pretty vigorously with a hard bristle brush. The parasiticide should then be firmly rubbed in all over in a chronic case, or only in the affected parts, such as the hands and genitals, in a recent one. The patient should sleep with the applications on all night, and take an ordinary warm soap-and-water bath in the morning, putting on clean clothing. This cycle may be repeated for two or three nights in succession, but never more; and if done thoroughly, and the precautions against infection taken, success is certain, and even one such course would be effectual in most instances. The classical parasiticide for scabies is sulphur, for which there are many formulæ. Simple sulphur ointment \mathfrak{zj} to the \mathfrak{zj} is generally sufficient, and the addition of balsam of Peru makes it less unpleasant. Sherwell advocates the washed flowers of sulphur, after a bath

with sand soap. The body and limbs are to be rubbed lightly with the powder—half a teaspoonful is enough. Between the sheets a little of the powder should be lightly sprinkled. This powderying is to be repeated every other night, and clean under-linen put on every other day, and in a week or ten days the cure is effected, if not cito, at least tuto et jucunde, as no secondary eczema follows.

I use in private practice, after the preliminary soaking and scrubbing, naphthol 15 parts, cret. prep. 10 parts, sap. mollis 50 parts, adipis 100 parts, as recommended by Kaposi, well rubbed in. For infants it can be used half strength and I omit the soft soap. I can speak of it in the highest praise. It is effectual, has no smell, and is not liable to irritate the skin, as sulphur does. It is, however, too expensive for public practice. Nephritis has occurred from its over-use, but I have never seen any bad symptoms. Another remedy less likely to irritate the skin than sulphur is balsam of Peru, of which the vapour alone is said to be fatal to the acari. The balsam is rubbed in for twenty minutes every night, a night shirt impregnated with the drug is worn, and in the morning an ordinary soap-and-water bath is taken. Hallopeau has recorded cases of ulceration of the skin produced by it.

McCall Anderson prefers styrax ointment, styracis liquidi ʒj adipis ʒij, or it may be prescribed with olive oil as a liniment. Carbolic oil 1 in 20 and a 5 per cent. creolin ointment are also used. Eudermol from $\frac{1}{2}$ to 1 per cent. ointment or lanolin soap has been recommended by Wolters of Bonn, but as it is a salicylate of nicotine, its use requires caution, as toxic symptoms may be produced. Pernol, a synthetic product, (benzoic acid benzyl ester), is recommended by Sachs and Juliusberg as being non-toxic, odourless, not staining linen, and a certain curative agent in 33 per cent. strength, and does not irritate the skin. The stronger sulphur applications of Hebra and Hardy and other formulæ are given among the animal parasiticide formulæ in the Appendix.

At University College Hospital, where there is every facility, sulphur baths are used. Four ounces of sulphide of potassium are dissolved in thirty gallons of water at a temperature of 100° F. in a porcelain bath; the patient soaks in this for a quarter of an hour, and is then well scrubbed with a hard brush, and allowed to soak for another quarter of an hour. While he is taking the bath his clothes are put in a disinfecting oven.

Three baths are generally ordered to make sure, but one or two are quite enough as a rule. The treatment never fails, unless the brush gets too soft to open up the burrows. When next the patient is seen, if he still complains of irritation, he has calamine lotion to soothe the skin which has been irritated by the long previous scratching or by the treatment. Sherwell's recommendation for the sheets may be used as a supplementary treatment.

Whichever of the many applications be selected, it should always be borne in mind that the patient does not cease to itch immediately on the death of the acarus, and that in many persons it takes a long time before the irritated cutaneous nerves will settle down. Alkaline baths, and calamine lotion, and other soothing or antipruritic lotions should be employed, and the patient's mind reassured as to the disease being really cured. Sometimes some of the better classes become quite hypochondriacal on the subject, and it is most difficult to persuade them that the acari are not alive, "crawling about them." The stronger, especially the sulphur applications, are often responsible for the continuance of the itching, and it is important to recognise this, as of course the continuance of the parasiticide is only adding fuel to the fire. Three applications ought always to be sufficient; and if the patient chance to get reinfected from wearing infected gloves, etc., a little naphthol ointment rubbed into the fresh lesions is all that is required. Passing a needle through each papule ensures the parasiticide reaching the acarus. A troublesome complication, chiefly after sulphur treatment, is a folliculitis of the thighs, which may go on for many weeks. Painting with liq. carbonis detergens, slightly diluted, is generally effectual. In order to prevent reinfection from the clothing, the underclothes should be thoroughly boiled, while cloth clothes may be well ironed, especially the trouser pockets, the iron being as hot as it can be without injuring the clothing. It is not necessary to disinfect them by superheated steam, as is done in pediculosis, though that is the simplest plan where opportunities exist. Obviously, if there are several in one household affected, they must be all simultaneously treated.

Sarcoptes Scabiei Communis. Under this head are included various other species of the sarcoptes, or acari, which form burrows, in which the female lives and deposits its ova. They affect

animals, such as the horse, sheep, dog, wolf, fox, pig, and poultry (*acarus depilis*), and may sometimes be transferred to man.

Although almost indistinguishable in their anatomy and habits, and capable of exciting a scabies eruption of ordinary character, except that burrows are absent, they cannot live permanently in the human skin, and spontaneous recovery will ensue in six or eight weeks.

In sarcoptic itch, contracted from the horse, the face and scalp may also be attacked; an extreme instance of this is recorded by Besnier,* the whole body being also involved. The treatment would be the same as for ordinary scabies.

Another species, the *sarcoptes minor*, lives only a few days on the human skin, or excites a transitory local eczema.

In 1896, there was a veritable epidemic in Barfleur of a rare *acarus*, the *glyciphagus domesticus*; it did not burrow, but formed colonies round the hairs.

Pascal† observed nine cases of desquamating scarlatiniform erythema in patches, which was traced to a minute *acarus*, "*spherogyna ventricosa*," which infests the larva of a moth which eats into barley. The patients had been engaged in sifting flour infested by these moths.

Layet of Bordeaux has described an *acarus* which irritates the skin, but does not burrow, and affects those who have to handle vanilla.

R. Menger‡ of Texas records a case due, it was supposed, to an undescribed *acarus* of the genus *chorioptes*. The clinical symptoms as described are so extraordinary that the interpretation of the case must be received with caution.

Rasch of Copenhagen met with a lady who suffered from intense pruritus, with strong evidence of "scratched skin," which was traced to a parasite of fowls known as *menopon pallidum* Nitzschii.

Dermanyssus Avium et Gallinæ. Bird mites, found on fowls and other birds, occasionally attack man during sleep, and excite eczematous or other irritation of the skin, which gets well without treatment.

* *Ann. de Derm. et de Syph.*, vol. iii. (1892), p. 623.

† *Ann. de Derm. et de Syph.*, vol. i. (1900), p. 947.

‡ *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. xv. (1897), p. 425.

DEMODEX FOLLICULORUM.

Synonyms. — *Acarus folliculorum* ; *Steatozoon*, *Entozoon*, or *Simonea folliculorum*.

This parasite was first discovered by Henle in 1841 in the ceruminous glands, and shortly afterwards by G. Simon in the sebaceous glands, the latter giving the first clear description of the animal. Mégnin assigns its zoological position to the family Demodicides, of which it is the only genus. In the dog this or another species produces follicular mange,* attended with free suppurative folliculitis, loss of hair, emaciation, and even death, if not treated in time. In man, the parasite is pretty generally distributed, being found in about one person in five easily, and with care in almost every one, but not in the new-born, and not in every sebaceous gland or comedo. It is easiest found in people with greasy skins by scraping the surface of the face with the back of a knife, and examining the scrapings in a little oil or glycerine, with a power of two or three hundred diameters. It may also be found by expressing several comedones and teasing them out in glycerine. There may be one or more, or even as many as a dozen, in one follicle, and they may be found in the sebaceous glands of the face, ears, and trunk. A. Kraus says they may be readily found by staining a film preparation with the Ziehl-Neelsen stain (*vide* Appendix).

Although associated with seborrhœa and comedones, it is not the cause of them, and as a rule produces no symptoms in man, but occasionally it has appeared to be the cause of skin lesions.

Remak records the case of a man who had suffered from an obstinate acne of the chin, nose, forehead, and back, and in the pustules with some difficulty found the demodex, but this is inconclusive. De Amicis met with a case of a lady, æt. twenty-seven, who had a pigmented patch of "café au lait" colour like tinea versicolor, which gradually spread over the lips and chin. There was some prominence of the follicles. Enormous numbers of demodex were found in the scrapings, and the patch disappeared

* Sparks, "Disease of the Skin produced by the *Acarus Folliculorum*," *Med. Chir. Trans.*, vol. lvii. (1874), p. 239, with bibliographical notices and a plate. Thudichum on "*Demodex Folliculorum*," *Med. Press and Circular*, August 1, 1894, with plate and literature.

after their destruction. Dubreuilh* has met with a similar case. Majocchi also had seen two cases of pigmentation with slight desquamation, apparently due to the abundant presence of this parasite.

Allen of New York showed a woman at the Dermatological Society with lesions on the face like molluscum contagiosum, in which the demodex was found in a very active condition.

Fordyce and Holder in two cases of acne rosacea found a large number of the demodex in the sebaceous glands.

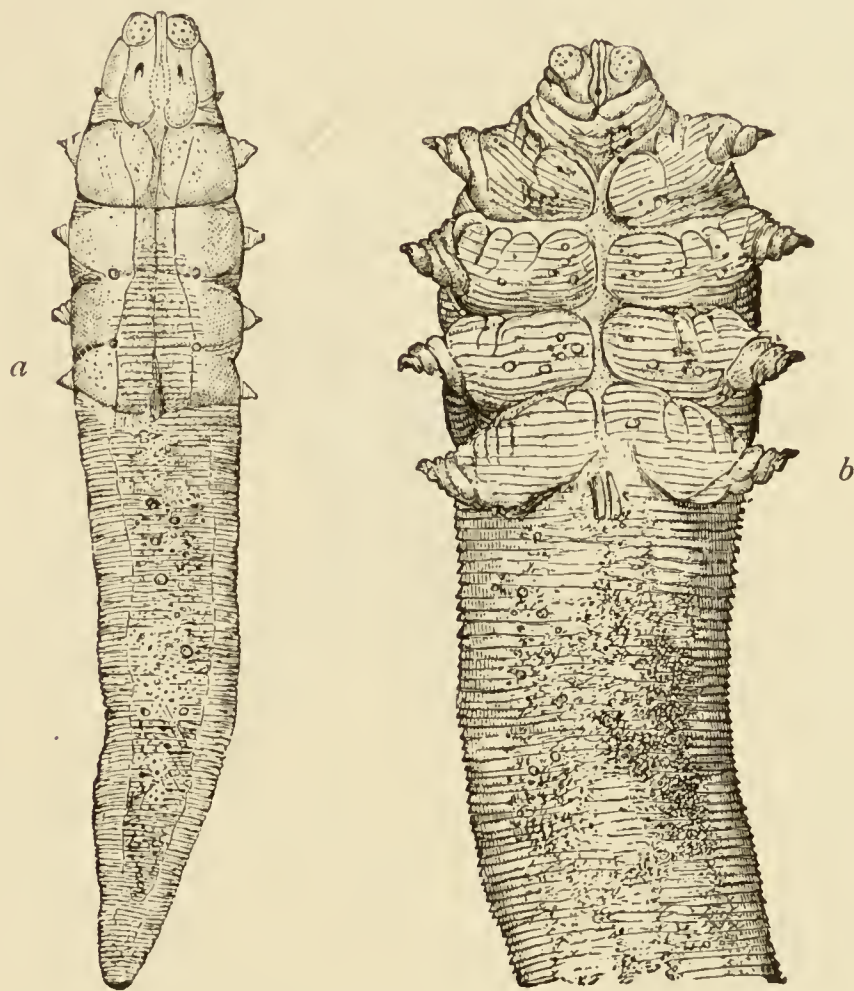


Fig. 105.—*a*, fully matured demodex folliculorum, dorsal view ; *b*, under surface of anterior portion of body, very highly magnified (Nayler).

Anatomy.—This acarus is worm-like in form, varies much in length, from about $\frac{1}{6}$ to $\frac{1}{3}$ of a millimetre, or $\frac{1}{12}$ ''' to $\frac{1}{6}$ ''', and has three segments: cephalic, thoracic, and abdominal. The head is about $\frac{1}{5}$ of the whole body, broader posteriorly, and provided with three-jointed pedopalpi and mandibles, moving like scissors. From this part extends the œsophagus, a delicate membranous tube, dilated at the end into a stomach close to the fourth pair of feet. The thorax is $\frac{1}{4}$ of the entire length, and is barrel-shaped, and to it four pairs of three-jointed rudimentary legs are attached. The abdomen is compared to the finger of a glove, being cylindrical and tapering towards the end, which is rounded. It is rather more than half

* Dubreuilh, *Extrait du Jour. de Médecine de Bordeaux*, January 27, 1901, refers to other cases.

the length of the body, and has an anal cleft on the under surface close up to the thorax. The male and female organs of generation are well differentiated, and according to Geber it is oviparous. The larva has only six legs, and, like the scabies acarus, undergoes metamorphological changes before it is sexually matured, the abdominal part becoming longer and more tapering, and the cephalic part more differentiated (fig. 105).

Ixodes, or **Wood Ticks** (Nat. Ord. Acarina). Several species are temporarily parasitic on man. *Ixodes ricinus* is the European and temperate zone species. It bores into the skin with its proboscis, sucks the blood until it is gorged, swells to the size of a large pea, falls off until it has digested its meal, then ascends again the pine or other tree, until a fresh victim passes that way, when it drops upon him and begins again. It produces a small wheal, and if caught in the act should not be removed forcibly, as it will then leave its proboscis in the wound, and give great pain; it should either be allowed to finish its meal in peace, and drop off spontaneously, or an essential oil or turpentine may be painted on, which makes it withdraw its proboscis and kills it.

Desnos and Laboulbène observed on the leg of a lady a growth the diameter of a pin's head, and three millimetres long, like a small fibroma pendulum; it increased in size for some days, then the pedicle ruptured and a female *ixodes reduvius* was released. If the observation is correct it is quite different to the usual occurrence, in which the tumour is the distended body of the parasite, only its head being buried, and forming what appears to be a pedicle.

LEPTUS AUTUMNALIS.

Synonyms.—Harvest bug; Mower's mite; *Fr.*, Rouget, vendangeur; *Ger.*, Erntmilbe, Grasmilbe.

This is the six-legged larva of a species of the *trombididæ*, "Le Trombidion soyeux," or *Trombidium holosericum*, according to Mégnin,* but others say it is the *trombidium autumnale*. It is of a brick-red colour, oval in shape, from $\frac{1}{3}$ to $\frac{1}{2}$ mm. long, and $\frac{1}{3}$ of a mm. broad, and has a fused cephalothorax, divided by

* "Les Acariens parasites," by P. Mégnin. *Encyclopéd. des Aide Mémoire*. He gives there a figure of the adult eight-legged acarus as well as of the larva and ovum.

a transverse furrow, from the abdomen. The legs are long, six-pointed, and with two claws on the tarsus, and there are no discoverable sexual organs (fig. 106). It flourishes especially in chalky districts near the sea.

Symptoms.—The animal bores its head only into the skin, producing bright red papules and wheals, which itch violently, and become proportionately scratched, with the usual consequences. In one of my cases, a general attack of impetigo contagiosa resulted. It usually attacks the ankles and legs first, but may spread to other parts of the body. It is seen chiefly in July and August, in people who have been in the fields, or among gooseberry and currant bushes, etc., and in severe cases, may be attended by



Fig. 106.—Six-legged larva of the *leptus autumnalis* (Küchenmeister).

slight febrile symptoms. Duhring, on the authority of Professor Riley of St. Louis, describes two other species, with similar habits, as occurring in the South-western States of America, viz., the *leptus Americanus*, American harvest mite, and the *leptus irritans*, or irritating harvest mite. Geber, in Ziemssen, describes another larva which is common in barley, and affects the reapers and loaders; it is an eight-legged, yellowish-white animal, with an oval boring apparatus, but without sexual organs. It produces urticarial lesions round the mouth of the follicles, and the animals may be found in their neighbourhood beneath the epidermis. In severe cases, the urticaria goes on to more or less severe eczematous dermatitis. The treatment is by mild parasitocides, such as are used in scabies, naphthol or weak sulphur, or white precipitate ointment. The soaking and scrubbing, necessary for scabies, are superfluous here.

PEDICULOSIS.

Deriv.— $\phi\theta\epsilon\acute{\iota}\rho$, the louse.

Synonym.—Phthiriasis.

These terms now signify the symptoms produced directly or indirectly by the three kinds of lice to be presently described. Formerly, however, even up to the beginning of the last century, the name phthiriasis was given to an imaginary disease, in which the pediculi bred in the flesh of the victim, in enormous numbers, and consumed him to the very bone.

No one, except Landois, now believes that such a disease ever existed. Indeed, the life-history of the pediculus absolutely negatives the possibility of a subcutaneous existence.

This much, however, may be admitted—that certain people are much more attractive as hosts than others, and that some cachectic states offer favourable conditions for the rapid development of pediculi. In the post-mortem room, even some corpses develop pediculi capitis very much more abundantly than others, and that, too, where there was no reason to believe that they existed during life. Of course in all cases, the pediculi come from without. While either of these terms logically refers to lice in general, when used without qualification, custom restricts the meaning to pediculi corporis.

I. Pediculus Capitis. This parasite is extremely common among the children of the poor, but, unlike scabies, is rare in the cleanly.

Symptoms.—The insect on the scalp excites no special lesion directly, but produces such intolerable itching that the patient is obliged to scratch vigorously, not only where the pediculus is at work, but all over the scalp.

In healthy, well-nourished people, the pediculi, if in moderate numbers, may lead to nothing beyond this. They keep where the hair is thickest, viz., the occipital region; here excoriations from the nails soon appear, and before long, especially in the poorly nourished, impetigo contagiosa is produced. At first, discrete pustules, covered with green-black crusts, are formed, or, if allowed to go on, several of these coalesce into one or more large patches, but nearly always with some discrete scabbed spots beyond the main patch. Many authors describe this eruption as

a pustular eczema, but the pus is always inoculable, and the characteristic lesions of impetigo contagiosa are often present on the body also. This eruption is so constant that a *pustular eruption limited to the occipital regions is almost diagnostic of pediculi capitis*. Where no means are adopted to kill them, and where the hair generally is neglected, the pediculi extend more forward, and the nits and impetigo lesions may be found all over the scalp.

These pediculi are nearly always confined strictly to the scalp,

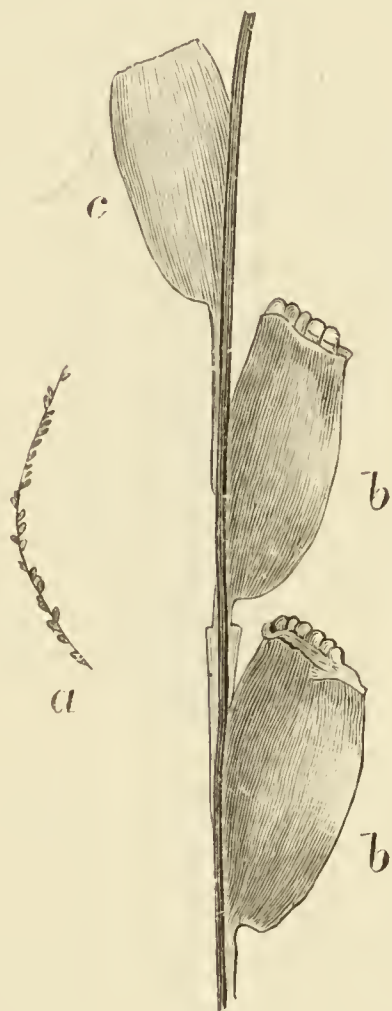


Fig. 107.—Ova of pediculi capitis.

a, natural size of hair with twenty-nine ova upon it ; *b*, *b*, ova, magnified, showing the cement attaching the ovum to the hair shaft and the operculum attached ; *c*, empty ovum, operculum fallen off.

but have in rare instances been found on the body in elderly bed-ridden subjects (Duhring), and Lydston* records a case of a girl of fifteen in whom they swarmed on the pubic hair but were not on the scalp ; also where the hair is allowed to hang down, similar lesions may be seen on the neck, mixed with excoriations from scratching, but the impetigo pustules are smaller as a rule. In cases of extreme neglect, the hair gets

* *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. x. (1892), p. 399.

matted together from the glutinous pus, and this, with the pediculi and other *débris*, scabs, scales, dirt, and fungi deposited from the atmosphere, make up the condition known as *plica polonica*.

The occipital glands, and in severe cases, the other neighbouring glands, undergo sympathetic enlargement, are tender, inflamed, and may even suppurate. The mothers always state that the lumps came first, then the sores, and then the lice, this reversal of the actual order acquitting them, as they think, of neglect.

Where the pediculi are only present in moderate numbers, the nits are more easily seen than the pediculi. They form small white specks, very like a small scale, but on pulling out the hair the nit is seen to be situated laterally on the hair shaft, while a scale is generally pierced by the hair. Moreover, on passing the fingers gently along the hair, the scale comes off, while the nit is glued firmly on. Commonly there is not more than one nit on a single hair, but where the pediculi are swarming they economise space, and I have counted twenty-nine strung at short intervals on one hair.

When the pediculi are sparse, the impetigo contagiosa is often the only disease complained of, but scattered scabbed lesions, for the most part limited to the occipital region, should at once lead to careful examination, when the lice or their ova will certainly be discovered.

Etiology.—Pediculi capitis occur at all ages, but are most common in children. They are always conveyed from one person to another, either by direct contact, as in persons sleeping together, or by using the same hat, brush, comb, etc.

Naturally pediculi are more frequent and flourish most in those who neither wash nor brush their hair very frequently.

Anatomy.—The head louse is about two mm. long and one mm. broad. The female is much larger than the male, and exists in much greater numbers. The young hatch out after six days' incubation, and are fully developed in twelve or fourteen days more; and as each female lays from fifty to sixty eggs, they multiply with great rapidity.

The head louse is smaller than the body or clothes louse; its head is acutely triangular, while that of the pediculus corporis is nearly oval; it has a broader thorax, and the margins of the abdomen are darker. The legs are shorter, and it is less active.

In a male, the last abdominal segment is rounded off and prominent. There is a valvular opening on the back, the common anal and genital opening. The penis, therefore, which is simple and wedge-shaped, protrudes on the dorsal surface.

The female has the last abdominal segment deeply notched at the apex, in which the anus is placed. The vaginal aperture is on the ventral surface. It is clear, therefore, that the female is uppermost in copulation.

The colour of the pediculus varies according to the colour of its host. On Europeans it is grey with blackish margins, on the Esquimaux white, on negroes black, on the Chinese yellowish-brown.

Treatment.—If the patient is a child, and it is not necessary to preserve the hair, this should be cut off close, the crusts softened with oil and picked off, or the hair cut underneath them, and ung. hyd. ammon. freely smeared on; this kills the pediculi, disinfects the pus, the sores readily heal, and the nits are got rid of with the hair.

Where it is necessary, as in women, to preserve the hair, the pediculi may be killed by rubbing in ung. hyd. ammon., and the

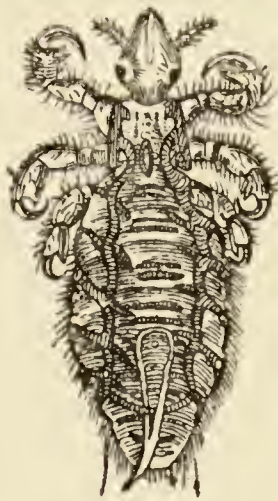


Fig. 108.—Male pediculus capitis, showing its system of tracheæ and its respiratory stigmata (Küchenmeister).

vitality of the nits destroyed by sponging small portions of hair at a time with the one in forty solution of carbolic acid; frequent combing will gradually detach the dried-up ova, or the cement will give way by sponging in the same way with a lotion of acidi acetici ℥ij, hyd. perchlor. gr. 3, aquam ad ℥viij. Where the disagreeable smell is not a bar to its use, soaking the whole head freely with petroleum, such as is used for lamps, is immediately destructive to the lice, loosens the nits, and the impetigo contagiosa can then be treated with the ung. hyd. ammon. dil.

It is said that lice are quickly destroyed by infusion of quassia, to which a little glycerine of borax has been added. It has the advantage of being cleanly and free from smell, but it would not detach the nits.

II. Pediculus Corporis. *Synonyms.*—Pediculus vestimenti; phthiriasis.

Symptoms.—This parasite is a denizen of the clothes, in which it carries on all its life processes,* except feeding. Like most parasites, it thrives most where the nutrition of its host is at a low ebb. It is, therefore, almost restricted to the aged and the dirty, the half-starved and cachectic, and it is only seen in the young when they are very neglected, or in very close contact with older victims.

The lesions produced by its presence are mostly secondary and due to violent scratching, which the operations of the insect induce. The only direct lesion is a minute hæmorrhagic speck, only just perceptible to the eye, and not at all to the touch.

Its production, according to Tilbury Fox, depends upon the mode of feeding. Schjödte describes this pediculus as follows: "It possesses no mandibles or other means of biting, but only a kind of sucking apparatus, consisting of a membranous tube, which can be protruded at pleasure. When the pediculus is about to feed, it inserts its labium into a sweat spore, and protrudes the lip. This lip is surrounded by a collar of hooks, which, though straight when at rest, become curved outwards when the lip is protruded, and thus afford a hold on the skin. The tube is now inserted, and the blood sucked up; and when the meal is concluded, the blood wells up into the orifice, and forms at first a pin's-point-sized, bright red speck, in a minute depression in the centre of a small, transitory wheal, and when the wheal, which itches violently, subsides, the speck of dry blood alone is left." I am, however, inclined to think it is only the excrement of the animal; but, however that may be, this "hæmorrhagic speck" is as distinctive as the burrow of the acarus is for scabies; but, inasmuch as it requires very careful looking for, the secondary lesions attract most attention. One of these may be easily mistaken for the characteristic speck. It is a small blood crust produced by the decapitation by the nails, of a slightly hyperæmic follicle. It is, however, not only larger than the "speck," but the nail, when passed over it, catches, while the hæmorrhagic speck is imperceptible. The secondary lesions are all those described under the "scratched skin" (p. 10); excoriations, wheals in parallel lines and spots, ecthymatous sores, and ultimately dirty brownish, in rare instances almost black pigmentation, with

* Jamieson's observation that the ova may sometimes be found on the lanugo hairs does not invalidate the general truth of this statement.

thickened, leathery skin. In themselves, there is nothing distinctive, their diagnostic importance depending upon their localisation.

The favourite habitat of the pediculi is just underneath the neck-band of the underclothing. Here they first establish themselves, and are always most abundant, and it is at the nucha and shoulders, therefore, that their ravages are greatest, and the scratching most vehement. So much is this the case, that extensive scratch-marks on the nucha and shoulders, in an elderly person, are practically diagnostic of pediculi corporis; when to these are added the hæmorrhagic specks, the discovery of the pediculi themselves or their ova on the clothes is fortunately of secondary importance, for too often, if the patient is lucky enough to possess a change of linen, he pays the doctor the compliment of putting it on just before his visit, and of course no pediculi are then to be found. Only in extreme cases, or at their meal-times, are they to be found on the body itself; and where they are so abundant, especially if in a young person, a pyrexia of several degrees, even as high as $106^{\circ}\cdot4$, has been observed. This Jamieson thought was reflex from the cutaneous irritation; but Payne, with more probability, thinks it may be due to some poison inserted by the insect analogous to that of the mosquito, bug, etc. In cases of some duration in dirty people, the scratch-marks are to be seen all over the trunk, except between the shoulders, which are not easily reached; on the front and inside the thighs, but not much below the knees; on the arms, but not much below the elbows, while the hands and wrists are always free. The thickened, leathery, and much-pigmented skin is always a sign of chronicity, and, being common in tramps, is sometimes called "vagabond's disease." Hebra regards this as the pityriasis nigra of Willan, and gives a plate of it in his atlas,* where the whole skin was of a deep bronze hue.

This melanoderma is sometimes out of proportion to the actual scratching, especially in chronic alcoholic and other cachexias, and is not confined to the infested regions. Thibierge has found it on the buccal mucous membrane, and suggests that the lesions of scratching are transformed into pigment which gets into the

* Lief v., plate xi., and Kaposi's Hand Atlas, plate ccxxi. Alibert in his quarto edition of 1832, p. 526, gives a plate in which the skin was quite black where the pediculi were most numerous. *Vide* note, p. 611.

circulation. Boudon's suggestion that it is the direct product of the parasite inoculating an irritant saliva lacks proof and probability.

The subjective symptoms are itching, burning, and formication, very intense, and always worse at night, not confined to the regions of the insect's operations, but reflexly felt anywhere and everywhere.

Etiology.—As already stated, phthiriasis affects the old rather than the young, the badly nourished and cachectic rather than the healthy and well-fed, the poor rather than the rich, dirt, neglect of ablutions, and alcoholism being the other chief favouring conditions.

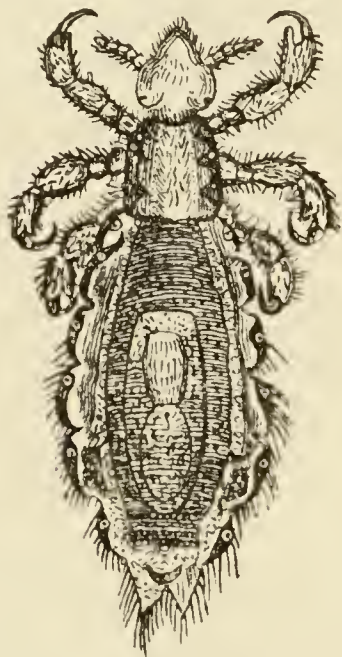


Fig. 109.—Female *pediculus vestimenti* (Küchenmeister).

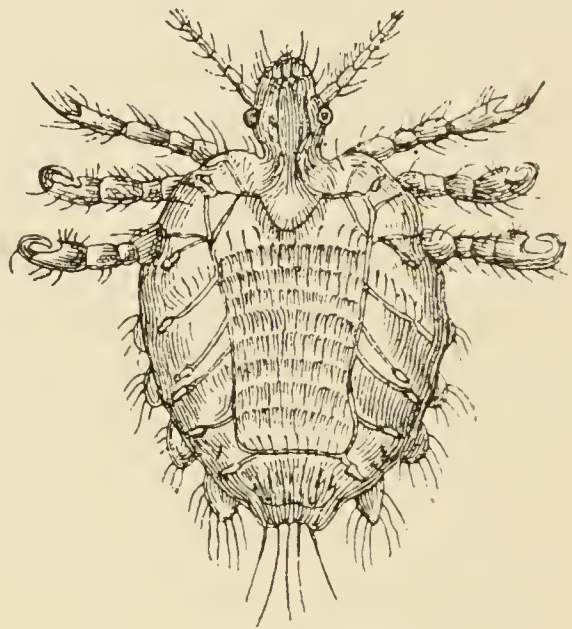


Fig. 110.—The *pediculus pubis*, or crab louse (Schmarda).

However suitable the subject, the disease is only acquired by the transference of the pediculi or their ova from another individual, spontaneous breeding being only a popular fiction. On the other hand, in young and vigorous subjects, even if exposed to infection, the lice will often fail to flourish, and even after infection in a young but half-starved patient, with cleanliness and good feeding alone, they will often die off. Clearly, therefore, unlike the *acarus scabiei*, the *pediculus corporis* has its preferences, probably some odour in the favoured person commending itself to the parasite. Indeed, I know of an instance in which four young medical men placed a pediculus in the middle of a small table, round which they stood, and the pediculus invariably went towards the same man, though they repeatedly changed their positions.

Kaposi, however, is of opinion, that it is only because the well-nourished and the better classes are seldom exposed, that they are seldom attacked; but this cannot be the whole truth, as pediculi corporis are seldom seen, even in dirty children. According to Cobbold, the pediculus of the cachectic is a separate species—*P. tabescentium*, or distemper louse.

Anatomy.—The body louse is larger than the head louse, which it otherwise closely resembles. The length is two to three mm. (three-quarters to two lines), and it is half that in breadth. The head is more oval and elongated than that of the head louse; the antennæ are longer, the thorax distinctly segmented, the legs more developed, with larger claws, and it is, therefore, more active. The colour is dirty white, with black margins. In other respects it is like the head louse, the larger size being the most conspicuous difference (fig. 109).

Diagnosis.—The diagnosis lies in the conspicuous evidence of scratching on the shoulders and nucha, especially in an elderly person, in its absence from the hands and wrists, and in the presence of the characteristic “hæmorrhagic specks.” Search in the folds of the clothing, especially about the neck, will result in the discovery of the pediculi and their ova, unless the linen has been very recently changed. In the younger patients, ova may sometimes be found on the lanugo hairs. However clean the patient, search for the parasite should always be made if pruritus is severe without other obvious cause.

Treatment.—The disease is always readily curable, if it be borne in mind, that the pediculi live in the clothes, and to them, therefore, the principal treatment should be directed. Where facilities exist, the clothes should be placed for some hours in a disinfecting oven, of at least 212° F. Failing the opportunity of this, repeated boiling will be effectual for the linen. For the patient, free ablutions with soap and water and alkaline baths to soothe the irritable skin should be employed. The ung. staphisagriæ, or petroleum lamp oil, freely rubbed in, kills any chance pediculi or ova that may be on the skin, or on any part of the clothing in contact with the skin. Care must be taken against reinfection from the bedding, etc., which should be treated like the body clothes. In marasmic subjects, suitable measures in the way of feeding, cod-liver oil, and the removal, if possible, of the cause of emaciation, are valuable adjuncts.

Jamieson recommends that a small lump of roll sulphur should

be wrapped up in a porous bag and worn constantly next the skin ; sulphurous acid is imperceptibly given off.

III. Pediculus pubis. *Synonyms.*—Phthirius pubis ; Crab louse ; *Fr.*, Morpion.

Symptoms.—This species resembles the pediculus capitis in its habits, but is much less common. The chief haunt of these insects is the pubic hair, from which they may spread up to the hair on the raphe of the abdomen, to the shaggy hair of the thorax, and thence to the axillæ and limbs. In very filthy people and in children, it may also be seen on the eyebrows* and lashes, when the minute nits on the hair and the “hæmorrhagic specks” on the adjoining skin are the most obvious feature. At the same time, they lie so flat on the eyelids that only careful examination with a lens will reveal their presence. The whiskers and beard may also be sometimes attacked, and it has very rarely been found on the head. In a case by J. Heisler from Roná’s *Poliklinik*, a child of fourteen months, who had slept with a servant-maid, had them not only on the lids and lashes, but all over the scalp, nits also being abundant there. Trouessart met with a case, æt. five months, contracted under precisely similar circumstances.

Grindon† met with a group of cases, five children and the father and mother ; the parasite was confined to the margin of the hairy scalp, not encroaching on the scalp for more than an inch. They were also on the youngest child all over the body, clinging to the lanugo hairs. White of Boston and Jamieson also mention cases.

Being much more stationary, of small size, of yellowish-brown colour, and lying flat on the skin, it is easily overlooked. Clinging usually to a couple of hairs, it digs deeply into the orifice of a hair follicle, and usually excites great and persistent irritation, though in some cases, the irritation is very trifling. Scratched-topped papules seated at the follicles, are the most commonly excited lesions, but if the pediculi are left to flourish, more severe eczematous inflammation is excited, and may spread beyond

* Cobbold considers that the lice that affect this position are a distinct species, which he calls the *P. palpebrarum*.

† “The Migrations of Pediculi,” *The Medical Fortnightly*, St. Louis, Chicago, March 15th, 1893, with numerous references to cases of pediculi in unusual positions.

the site of its irritation. Pyrexia has been observed in connection with this species also (Payne).

Besides the pediculi and their minute grey-coloured nits, which are attached to the hair close to the skin, Morrison, in 1868, showed that finger-nail-sized, steel-grey spots of pigmentation (*maculæ cæruleæ*, *taches ombrées*) are sometimes observed deep in the epidermis of the affected areas; and Duguet, in 1880, 82, showed that this pigment was contained in the thorax of the animal opposite the anterior pair of legs, where there are known to be two pairs of salivary glands, and it is probable that the secretion is conveyed into the tissues through the haustellum. The blue spots are more marked in persons with clear, white, transparent skins, and in the months of February, March, and April. The blue spots are, therefore, mere stains of the epidermis, and disappear in a few days after the destruction of the pediculi. Jamieson thinks that the stains have some anæsthetic effect, as far as itching is concerned, though not for the other sensory phenomena. Oppenheim* has observed a green colouring matter in pediculi pubis, especially in impregnated females, while it was absent in the young lice.

Etiology.—This variety is more commonly seen among the well-to-do than the other kinds, being most frequently communicated during impure intercourse. Of course it may be also derived from the bedding, clothes, etc.

Anatomy.—The pediculus pubis (fig. 110) is much broader and flatter in proportion than the other pediculi. The female is about one and a half to two mm, long and three-quarters of that broad. The male is about half the size of the female, and the terminal segment of the abdomen is rounded, while in the female it is notched. The head is rounded, provided with five pointed antennæ and two small, prominent eyes behind them. It has a neck, by which it is attached to the sulcus of the heart-shaped body, the broad, flat thorax being merged into the abdomen, and carrying anteriorly a slender pair of legs, which are used for walking, and terminate in a straight claw; while the two posterior pairs of legs are stronger, and used for clinging and climbing, and are accordingly provided with strongly curved claws, and, with the tarsus, make three-quarters of a circle. The ova are ten or fifteen in number, hatch out in a week, and the young are sexually mature in two weeks.

Diagnosis.—The diagnosis can present no difficulty, if the possibility of their existence be borne in mind in every case of

* *Archiv f. Derm. u. Syph.*, vol. lvii., p. 235.

pruritus of the pubes and other regions liable to their attack. At the same time they require a close investigation, as they are very small objects, being almost immobile and lying close to the surface, they do not look like live animals. A common source of error is that the secondary eczema occupies all the attention until the fact of the irritation being out of proportion to the degree of eczema induces closer investigation.

Treatment.—Naphthol ointment, as recommended in scabies, should be rubbed in, or hyd. oleat. 5 per cent. ℥vj, æther sulph. ℥ij is a good application, and kills the nits; or Peruvian balsam and vaseline or lard, in equal parts; or they may be subjected to the vapour of chloroform; or the part may be freely dabbed with a lotion of hyd. perchlor. 1 in 250, and the nits destroyed with carbolic lotion 1 in 40. The classical treatment of two good rubbings of the ung. hydrargyri is effectual, but not free from the danger of exciting a dermatitis of its own. Calamine lotion should be applied freely after the animals and their ova are killed, in order to allay the irritation, which does not subside at once; and the patient's mind should be tranquillised by explaining this, or he is apt to fancy himself uncured, and resort to violent and quack remedies. The various lotions for nits already described for pediculi capitis find a place here also. It is better not to cut the hair on the pubes, as the pressure of the clothes on the ends of the growing hair produces intolerable irritation, until the hair has grown long enough to curl.

Pediculi ciliarum are best treated by picking off the living lice with forceps, rubbing on diluted nitrate of mercury ointments, and sponging the eyelashes with carbolic lotion 1 in 40 to kill the nits.

PULEX PENETRANS.

Synonyms.—Rhynchoprion penetrans; Nigua; Chigoe; Jigger; and many other local names.

This parasite is indigenous to tropical America, between 23° N. and 28° S., and in 1872 was imported into Africa, and spread widely over the Gaboon and Congo coast. It has also been met with in Madagascar and China. It only survives for a short time (a few months) when imported into temperate climates. Dry sandy soil, the dirty huts of negroes and Indians, piggeries, cattle-sheds, and poultry-pens are its chief quarters. The animal is

like a common flea, but smaller, with a proboscis as long as its body, and has a deeper abdomen.

The impregnated female alone bores obliquely into the skin, most commonly under or beside the toe-nails, between the toes, or the less common positions are, parts of the foot other than the toes, the arms, scrotum, knee, upper extremity, and face, burying herself all but the two last segments, which plug the orifice of entrance and do not partake of the enlargement of pregnancy. She remains until the maturation and extrusion of the eggs, which distend the abdomen into a sac as large as a small pea.

A thirteen-ringed larva hatches out a few days after the ova are deposited on the ground, and some days later encloses itself in a cocoon, from which it emerges in eight to ten days as the perfect imago, taking probably about the same time for her life-history as the common flea, viz., rather less than a month.

Her subcutaneous sojourn excites painful inflammation, swelling into a pea-sized tumour, suppuration, and ulceration, tending to expulsion of the parasite, but not until she has fulfilled her destiny and has discharged her ova. The resulting ulcer may from secondary microbic infection be the seat of extensive ulceration or gangrene, and even tetanus may supervene. There is usually only one or two chigoes in a foot, but there may be hundreds producing a honeycomb of cicatricial pits (Manson); Declé speaks of two hundred and eighty from one person.

The treatment consists in picking out the chigoe with a blunt needle, taking care not to rupture the abdomen; anointing the foot with essential oils, chloroform, turpentine, or carbolic oil, which kills the insect and prevents further attacks. Abscess cavities should be washed out with disinfecting solutions—corrosive sublimate one in two thousand, or carbolic acid one in forty.

Cleanliness, washing the floors with carbolic acid, and always wearing shoes are the best prophylactics.

Pulex Irritans. The common flea is only too well known. It produces a red spot, seldom so wheal-like or large as that of the bug, with a central puncture, which, when recent, will distinguish it from erythematous eruptions due to internal causes, but in a short time, especially in cachectic subjects, it becomes petechial, and, if associated with fever from some other cause, may give

some trouble in diagnosis from typhus, measles, etc. The general dirtiness of the patient, and the more recent bites, will give a clue to the cause.

The human flea may be transferred to the dog, and that of the dog to a man, but it does not live long upon him. Berg records a case of a filthy old woman with psoriasis, in which the larvæ of the common flea were flourishing amongst the scales and crusts of her disease. A rise of temperature has been known to occur from extensive flea-bites.

Cimex Lectularius, *Acanthia lectularia*, or common bed bug. This animal, with its repulsive smell, is too well known to need description. It comes only on the human body to feed, puncturing the skin, injecting an irritating fluid to increase the hyperæmia, and sucking its victim's blood. It produces a wheal, a raised red spot, with a whitish centre and a central puncture, and on the subsidence of the swelling, there remains a purpuric spot, which follows the usual course of petechiæ. A formidable species, the *Conorhinus sanguisugus*, or "big bed bug," excites severe inflammation, and is said by Riley of St. Louis to be found in beds in Illinois and Ohio.

Treatment.—Toilet vinegar, carbolic acid lotions, weak liquor ammoniæ, corrosive sublimate one in five hundred, or Goulard water sponged on freely, or the lotions recommended for urticaria, give most relief.

Culex Pipiens and other Gnats and Mosquitoes of various species, all over the world, attack man and produce a wheal, and in hot climates they are a real pest, and great precautions have to be taken to prevent their access at night. Species of tabanidæ and simulium also excite wheals in different localities. Weak liquor ammoniæ or sal-volatile, and the other remedies mentioned under bug-bites, give relief to the intolerable itching. Rubbing the part with soap, and allowing a stream of cold water to run on it, is said to give immediate relief. Carbolic oil rubbed on is another good remedy. The tsetse fly, so fatal to beasts of burden in Central Africa, produces wheals only in man. Sponging the surface with infusion of quassia is a good prophylactic against mosquito-bites and the importance of prevention is very great now that they are known to be the carriers and circulators of so many diseases, such as yellow fever, malaria, filaria, etc.

Æstrus, Gadbreaze, or Bot-fly.* The term "*myiasis*," or dermatomyiasis has been proposed for the attacks of dipterous larvæ on the human subject, but the cases are too rare to require a special name. Cases of the presence of dipterous larvæ of several species of œstridæ in the skin have been reported from time to time by various writers in Europe, of whom Walter Smith, McCalman, Walker of Shetland, and Dubreuilh may be specially mentioned. In Shetland it is said to be common, and always in women. It is often met with in Africa, especially in Senegal, and in Central and South America, where it is known as "ver macaque." They are all for the most part parasites of herbivorous animals, dogs, etc., and are only occasional visitants to man. Humboldt's œstrus hominis is now known to have no existence.

The ova or larvæ are deposited under the skin by means of the stinging apparatus, and set up either furuncular inflammation with a central aperture, through which the larvæ may be pressed, together with a sanious fluid, or they burrow under the skin, forming irregular serpiginous lines or wheals, which Walker compares to that produced by an inflamed lymphatic, but it is of a purplish colour; at the end of this line suppuration occurs before the larva escapes. Carbolic acid (1 in 40) should be injected into the cavity after evacuating the larva.

The gastrophilus larva is separately described below. Other dipterous larvæ invade the skin only where there is a previous breach of surface, such as the sarcophila Wohlfarti (Europe), the lucilia hominivorax, and macellaria (America and Asia); they produce severe ravages in a short time, inducing gangrene of the skin, destroying fat muscles and vessels, and endanger life.

Larva Migrans of Gastrophilus.† This lesion, produced by the

* *Literature*.—Smith reports an interesting case of dipterous larvæ in the skin in *Report of Inter. Med. Cong., London, 1881*, with partial bibliography and the substance of McCalman's case. Matas, in reporting a case from Honduras in which red furuncular swellings were produced, says there are three species which attack man—the hypoderma bovis, a species of trypoderma or cuterebra, and dermatobia noxialis; his case was due to the last species. W. Dubreuilh, "Les Diptères Cuticoles chez l'Homme," *Archives de Médecine Expérimentale*, No. 2, March, 1894, a comprehensive account with valuable references. Abraham gives a good historical and bibliographical account of the subject, *Trans. Derm. Soc. G.B. and I.*, vol. iii. (1897), p. 62. His criticism of my name, "larva migrans," is beside the mark, as it is obvious that it was proposed for the larva, and not for the disease.

† *Literature*.—Author's Atlas, plate xciii., figs. 2 and 3, with full account of

above-named larva, was first described by Robert Lee, as a "creeping eruption" from two cases (1875 and 1884), then by myself (1892), and Neumann and Rille of Vienna, 1896. It appears, however, to be fairly common in South East Russia, near the Volga, where it is popularly called Wolossatik (Woloss, hair), two Russian observers, Sokoloff and Samson-Himmelstjerna, seeing two or three cases a year in that district. A case has also been observed in Bulgaria.

I am informed that in children in Arabia, it is very common, and that mothers burn the part with a hot wire.

The two Russian observers have found the larvæ which others have failed to do.

They identify it as the larva of a dipterous insect, order œstridæ of the genus *gastrophilus*, species undetermined; but if Sokoloff's



Fig. III.—Larva of *gastrophilus*.

observation that he found black empty nits on the hair in the neighbourhood of the track is correct, it would suggest one of two species, *hæmorrhoidalis* or *pecorum*, as only these two have black nits. The larva is spindle-shaped, segmented, and from one to one and a half millimetres long.

How the larva gets into the skin is unknown; the mother of my case said that the child was found with half a slug in her hand as if it had been bitten off. Several cases have commenced in the buttock and have been attributed to the closet seat, but the more probable, explanation is that the insect took advantage of the

the case which was sent to me by Dr. Travers Smith. *Clin. Soc. Trans.*, vol. viii. (1875), p. 44, with report; and vol. xvii., p. 75. Neumann, *Archiv. f. Derm. u. Syph.*, vol. xxxiv., Heft 1 (1896), p. 905; abs. *Brit. Jour. Derm.*, vol. viii., p. 145, of Russian papers. Samson-Himmelstjerna, *Ein Hautmaulwurf*, with plate of case and woodcut of *gastrophilus* larva. Short abs. *Amer. Jour. Cut. and Gen. Ur. Dis.*, vol. xvi. (1898), p. 297.

exposure of the buttocks to deposit its ova in the skin of that part. The lesion produced is a narrow red line a sixth to an eighth of an inch broad, only just perceptibly raised. This line travels over the surface at the rate of an inch or more a day, an inch being the usual distance, performing all kinds of curves and gyrations, though sometimes it goes straight, once, in my case, for seven inches in a day. The red line fades at the passive end in a few days, while the larva itself is from a quarter to an inch or more beyond the active end, where there is some itching and burning by which some adults can locate the larva. The larva may travel more or less actively for months; in my own case it was on the march for two and a quarter years, when it was apparently killed by a suppuration in the neighbourhood of the track, but it is never the exciting cause of a suppuration. It may limit itself to a small area, *e.g.*, one cheek (Matschinsky), or travel all over the thigh and trunk, as in my case, sometimes rapidly.

Treatment.—Subcutaneous injections of carbolic and iodine solutions failed in my case, only stimulating the larva to increased exertions; external applications had the same effect. Excision of a portion of skin (half an inch beyond the red line) is the only plan which has been successful. Samson-Himmelstjerna says the parasite can be located as a dark point by pressing the blood out of the skin with a lens, its removal would then be easy.

CRAW-CRAW.

This is a disease of the west coast of Africa, occurring chiefly in negroes. Conflicting accounts are given by different reporters, and further observations are needed before a definite conclusion can be arrived at.

Probably the term *craw-craw* is used rather loosely in Africa. I had a patient, an officer from the west coast of Africa, who said he was told there, that he had *craw-craw*, but what I saw was evidently *tinea cruris*. C. S. Grant, who practised in West Africa, says that it is a kind of scabies, and is curable by itch treatment; others deny its curability by sulphur.

According to O'Neill,* it is an eruption with papules, vesicles, and pustules, attended with violent itching, and looking like old scabies, but the eruption and itching decline if the patient goes to

* *Lancet*, vol. i. (1875), p. 265, with illustration of the worm.

a cooler climate, and returns in the hot, moist climate of the west coast.

If the top of a papule is shaved off, moistened with water, and placed under the microscope, a filarial organism, something like the *filaria nocturna*, may be found, but it has two distinctive black marks near the cephalic end, and is also shorter and broader (P. Manson).

Manson also draws attention to a possible fallacy, as in that part of Africa, *filaria perstans* affects half the population, and might therefore be present without being the cause of the malady in question. Still, as *craw-craw* and *filaria perstans* have a similar geographical distribution, they may be etiologically related. Emily,* who has proved himself to be a good observer, says it is well known on the French Congo and the Upper Ubanghi district. It has a highly characteristic course and appearance.

“Commencing as a small reddish-brown macula, situated usually on the lower extremities, but also on the dorsal aspect of the hands and elsewhere, the disease from the first is attended by an intolerable itching, which forces the sufferer to scratch himself violently. A *craw-craw* ulcer when fully established is encircled by a zone of inflamed skin of the colour of wine lees, and may attain the dimensions of a five-franc piece. It consists in an excavation with nearly perpendicular sides, and a granulating bottom whence thickish pus exudes. When exposed to the air, this secretion hardens, covering the surface of the sore with a dense impermeable pellicle, beneath which the pathogenic agents, whether specific or otherwise, doubtless pullulate freely. *Craw-craw* has been ascribed to the gonococcus. The ulcers are invariably multiple and may occur all over the body. Dr. Spire of Ubanghi has met with them on the penis, where they simulated chancres, the resemblance being accentuated by inguinal adenopathy.”

Nicholls, in his report on yaws in 1893, describes “coolie itch” as he saw it in St. Lucia, and it resembled Emily’s account of *craw-craw* in many respects, although derived from East Indian emigrants; while Numa Rat† in St. Kitt’s described quite a

* *Archives de Médecine Navale*, 1899; full account in *Lancet*, March 15th, 1899, p. 782, from which the following description is quoted. Emily’s paper was sent from Fashoda on December 8th, 1898.

† *Brit. Jour. Derm.*, vol. viii. (1896), p. 201, with photograph.

different affection as "coolie itch," the papules being dry, and there being no vesicles, pustules, or ulceration.

According to Manson, the case reported by Silva Arango in Brazil as a case of crawl-crawl with chyluria and elephantiasis Arabum, in which he found embryo filaria, and one dead mature one in the urine, but none in the skin, is really a case of filaria nocturna, which is also well known as a cause of lymph abscess, tropical elephantiasis Arabum, and lymph scrotum.

Nielly of Brest in 1882 observed the case of a boy, æt. fourteen, who had never left France, with symptoms like crawl-crawl, and he found nematodes in the papules in all stages of development, some of them sexually mature females, very like the filaria described by O'Neill. They had two peculiar markings at the cephalic end, a well-defined alimentary canal, but rudimentary genitals. At one time it was associated with a nematode embryo. Probably, writes Manson, the skin parasite was an advanced form of the embryo of the blood, and both were the offspring of a mature worm somewhere in the tissues, the rhabditis Nielly. Nielly thought it belonged to a species of leptodera of the family of the anguillulidæ, a view with which Geber agrees, both for this and O'Neill's case. The natives consider that crawl-crawl is contagious, and that it has an incubation period of three days; but if it is a filarial disease, as above described, it could not, says Manson, be contagious, and must have a much longer incubation.

It is evident that there is a good deal of confusion on the subject. As far as I can judge, Emily's account seems to me most likely to represent the real affection, but even there the pathology is left obscure, and perhaps Brault's conclusion is the right one. After analysing the descriptions of previous authors, he says that it will ultimately be dismembered by further investigation, and cease to be considered a special morbid entity.

Treatment.—Hitherto relapses have taken place even after prolonged treatment and apparent cure. Emily, however, believes he has found a cure in boric acid.

The skin round the ulcer must first be made aseptic, removing hair and washing with soap, followed by corrosive sublimate solution. The ulcer itself is also cleansed with the perchloride and boiled tepid water, wiping the base firmly with wet lint until all pus is removed.

Pure boric acid is then freely applied, followed by boracited vaseline and antiseptic bandaging; the pain of the above procedure soon subsides. After five or six days the dressing is removed and the ulcer will be healed.

DRACUNCULUS MEDINENSIS.*

Synonyms.—*Filaria medinensis*; Guinea-worm; Dracontiasis.

This is the proper name for the disease, but it is rarely employed.

Definition.—A nematode worm of the genus *dracunculus*, which attains to maturity in the human body, and forms a subcutaneous abscess-like tumour, preliminary to its exit.

The disease is endemic in Arabia Petræa; the borders of the Persian Gulf and Caspian Sea, Bokhara, where it is universal; the East Indies, especially Bombay and Scinde, and the banks of the Ganges; in Upper Egypt, Nubia, Abyssinia, the coast of Guinea and the Gold Coast, and Mauritius; and occasionally in some of the West Indian islands and in Brazil.

Of all these places, on the West Coast of Africa and the Deccan it is most prevalent, affecting almost the whole population at some seasons of the year. It is only seen in Europe, in those who have recently lived in its usual haunts. Domestic animals occasionally contract the disease, and it has also been observed in the dog.

Symptoms.—The worm gives rise to no trouble until fully developed, when it can be felt under the skin like a coil of soft string. It frequently migrates to a considerable distance from the point where it was first observed before it reaches its point of exit, and may keep up its travels for months. When about to escape, in the slighter cases, a sharply circumscribed pea-sized vesicle is formed, and may increase to the size of a filbert; its formation is preceded and accompanied by a feeling of tension and itching. When rupture occurs, either from scratching, poulticing, or puncture, a serous fluid escapes, which is clear if the worm is entire,

* *Literature.*—*Science and Practice of Medicine*, by Aitkin, seventh edition (Griffin: London), *Parasites*, by Cobbold (Churchill: 1879), contains the bibliography up to date. *Guinea-Worm and Dracunculus*, by J. A. B. Horton (Churchill: 1868). Manson's Tropical Diseases, 1900.

but turbid if the young have escaped; a shallow ulcer or excoriation is exposed corresponding to the size of the vesicle. In the centre of this is a large pin-hole through which the white head of the worm may or may not be extruded. If not, Manson's procedure is as follows, in nearly his own words:—A gentle stream of cold water from a sponge is allowed to fall on the opening, when a droplet of fluid at first clear, then milky, comes up through the hole and spreads over the ulcer; or a pellucid tube, one-sixteenth of an inch in diameter, the prolapsed uterus, protrudes for about an inch, then suddenly fills with an opaque whitish material, ruptures and collapses, discharging myriads of coiled up sluggish embryos which straighten out in water and are one-thirtieth of an inch long and very active. Even without the stimulus of a cold douche, the head of the parent worm is usually gradually extruded, either at once or only after some delay. If not extruded at once, sometimes the wound closes, and another tumour forms in the neighbourhood, but in a properly managed case, the removal is effected in from three to ten days, and the ulcer soon heals. In more severe cases, violent inflammation may occur along the whole worm track, and there is then pain, redness, and swelling, followed by a copious purulent or ichorous discharge, hectic fever, and perhaps delirium.

This inflammation is liable to kill the worm, and lead to its breaking during extraction—a very serious accident, which may result in crippling, gangrene, and even death from exhaustion, or from tetanus, the abscess bursting into the abdominal cavity, etc. These serious consequences are generally considered to be due to the escape of the embryos into the tissues, where they were once found by Böttcher. In more fortunate cases, when the live worm is broken, it may be discharged at a later period by the formation of a fresh tumour. The point of exit is, in two-thirds of the cases, in the foot, especially in the heel; in about a fourth of the remainder, the exit is on the leg and thighs, and in exceptional cases, it has occurred on the scrotum, hands, trunk, neck, head, nose, and orbit; in short, the worm has been found almost everywhere, except in the brain and eye. As a rule, there is only one worm, but sometimes two, and as many as fifty have been recorded (A. Farre), and Dr. Mircus of Lissa recorded a fatal case, where the whole body and skin were a network of guinea-worms. When the worm dies prematurely

before the skin is pierced, it may either set up an abscess or become cretified.

Pathology.—The female worm, to which this disease is due, has a uniformly cylindrical shape, one-tenth of an inch in diameter, and is usually from twenty-five to thirty inches long, though extremes of one foot and six feet* have been recorded, the African being larger than the Indian worm. The tail is pointed and curved into a hook, the head slightly convex, with a central mouth, surrounded by four, small, equal papillæ and two larger. It is viviparous, enclosing an enormous number of embryos, and it reaches its destination in the following way, as discovered by Fedschenko of Turkestan. The embryos, which have escaped from man into water, penetrate the bodies of a minute crustacean of the genus cyclops (species quadricornis), where they undergo full larval development in five weeks in hot and nine or ten in colder climates. When the cyclops host is swallowed in the drinking water, or accidentally in bathing, the larvæ escape, undergo sexual development and impregnation in the human interior at an early stage of their existence, and the female then sets out on her migrations through the tissues, the male, which has never been discovered, dying, and being absorbed or cast out, in the fæces.

The impregnated female very soon makes her way into the connective tissue between the muscles, and grows quickly to some size, pains in the muscles sometimes testifying to her presence; but it is nine to twelve months from the date of her entrance into the body before the worm appears at the surface, and Busk says it may even be eighteen months.

Diagnosis.—The diagnosis can only be made when the worm can be felt under the skin like a coil of string, and its nature will become more certain, if it changes its position, before it forms the tumour preliminary to its exit.

Prognosis.—This is favourable unless violent inflammation occurs before or after the opening of the abscess, the consequences being especially serious when the worm is broken during extraction.

Treatment.—From what has been said, the indication clearly is

* Ewart measured forty worms and found the extremes twelve and forty inches. It has been suggested that the worms of extreme length are really cases where two worms have been measured as one.

to remove the worm entire, or to bring about its death before it can discharge its embryos. This latter indication has been so effectually accomplished by Emily, a French naval surgeon, as to almost supersede other methods, the old plan of gradually winding the extruding pregnant worm on a quill or piece of wood having been justly abandoned as dangerous.

With a hypodermic syringe, Emily* injected a solution of 1 in 1000 perchloride of mercury, either directly into the worm if extruding, or if still under the unruptured skin, a few drops are injected through several punctures as near the coil as possible. Both methods kill the parasite and its embryos. In the first case, after twenty-four hours the worm can be wound out without resistance. In the second, she is absorbed without setting up any inflammation, a perfect cure being obtained in three or four days.

The improved extraction plan of Forbes, Dick, and Manson is to douche the part frequently with water, as related above, when the uterus will be gradually and naturally emptied of the embryos. This takes from fifteen to twenty days, and she no longer resists extraction, and will often issue forth spontaneously; if not, a little compulsion may be safely exercised, the worm being wound out on a quill or cedar pencil, but this must not be done until all the embryos are out. The saving of time by Emily's plan entitles it to the preference.

CYSTICERCUS CELLULOSÆ CUTIS.

Rokitansky first demonstrated the presence of the cysticercus of *tænia solium* in the subcutaneous tissue, and cases have been reported by Lewin, † Guttman, ‡ Schiff, § and others. Indeed, Küchenmeister and Zürn state that at least 5 per cent. of all cases of *tænia solium* affect the skin. Most of the cases have been observed in North Germany, where half-cooked pork is more frequently eaten than in other countries. These small hydatids are rarely single, and usually very numerous, but do not appear

* *Brit. Med. Jour.*, July 7th, 1894, p. 23. He treated on the Niger 105 cases in three months, and others have endorsed his statements.

† *Viertelj. f. Derm. u. Syph.*, vol. iv., heft iv. and vol. xxvi. (1894), heft 1 and 2.

‡ *Berlin klin. Woch.*, No. 26, 1877.

§ *Lancet*, vol. i. (1879), p. 753.

together. They occur chiefly on the back and sides of the trunk, less frequently on the extremities. They are really subcutaneous, and appear externally as oval or roundish pea-sized tumours as a rule, but varying from a lentil to a walnut. The skin over them is normal, and when the animal is alive the tumour is firmly elastic and movable. After death they shrink, and become hard nodules, which are often calcified, but they take two or three years to become thus completely obsolete. They rarely give rise to pain or other inconvenience, unless they are unusually large, or exposed to pressure, or in the rare event of suppuration taking place; capillary hæmorrhages may sometimes occur from degeneration of the vascular walls. Their interest lies chiefly in their diagnosis. Pye-Smith* showed a man of about thirty to the Dermatological Society in April, 1892, in whom there was a large number of pea- to marble-sized nodules imbedded in the subcutaneous tissue, chiefly of the upper part of the trunk, but also in the limbs, head, and neck, some of them being in lines. The skin over them was unaltered; they were quite firm to the touch, painless, and felt more like nodules than cysts, and this has been so in the other cases I have seen. Their real nature was not suspected until one was excised from the forehead, when they were found to be cysts containing embryos with a single circle of alternately large and small hooklets. Perrin read a case at the Dermatological Congress at Vienna, probably due to auto-inoculation. Galatti's case, a girl of ten, had a single hazel-nut-sized growth of cartilaginous consistency just above the umbilicus.

These cysts may be mistaken for rheumatic nodules, gummata, lipomata, sarcomata, carcinomata, and sebaceous cysts. Careful consideration of all the circumstances† and symptoms will lead to a suspicion of their nature, which will be confirmed by excision, or even puncture, of one of the tumours, when the hooklets will be discoverable in the escaping fluid.

Echinococcus hydatid has also been reported as having been found in the skin by Davaine. It forms a semi-translucent, fluctuating tumour, with the skin over it unchanged. The parasite

* "Case of Multiple Cysticerci of the Subcutaneous Tissues," *Brit. Jour. Derm.*, November, 1892, illustrated.

† De Amicis had two cases who also had epileptiform convulsions, and in two other cases that I have met with, this has been the first symptom to attract the patient's attention.

dies in one or two years, and the diagnosis would probably not be made without an exploratory puncture, and discovery of the hooklets with the microscope.

Three cases of encapsuled rediæ, or embryos of the distoma hepaticum, have been collected by Küchenmeister. They were only diagnosed after removal.

Sharkey has found the ova of *Bilharzia hæmatobia* in some human skin sent to him from Cairo.

Arnold* of Bulawayo reports a case of what appeared to be boils, but closer examination showed that each lesion contained a larval form of worm one-third of an inch long.

Ankylostoma larvæ. Hitherto it has been supposed that this parasite obtained entrance to the body only through the mouth, but Looss† suspecting that he had himself been infected through the skin, put a drop of water containing larvæ on the skin of a leg which was to be amputated in an hour. After-examination showed that the larvæ gained entrance chiefly by the hair follicles, then penetrated the papilla, and thence into the sub-cutaneous tissues.

* *Lancet*, April 2nd, 1898, p. 960, with figure of parasite.

† *Centralblatt f. Bakt.*, May 30th, 1901. Abs. *Brit. Med. Jour. Epit.*, November 23rd, 1901.

APPENDIX.

AN ANALYSIS OF FIFTEEN THOUSAND CASES OF DISEASES OF THE SKIN.

STATISTICS of diseases of the skin require a good deal of qualification before they can be accepted as tests of the frequency of any particular disease. Thus, the cases which are rebellious to treatment, such as tinea tonsurans, naturally gravitate in undue numbers to a special department. Cases which are relievable, but seldom curable, like both forms of lupus and psoriasis, and to a less extent tertiary syphilis, come back year after year, and are counted as fresh cases. On the other hand, cases which are easily recognised or easily curable, such as herpes zoster, molluscum contagiosum, etc., have a much smaller place than their real frequency would entitle them to. Again, very rare diseases, and even the less common forms of disease, such as lichen planus, with which many practitioners are unfamiliar, naturally find their way in undue proportion into dermatological statistics; while many new growths, such as fibroma, epithelioma, rodent ulcer, and vascular nævus, are quite as, or even more likely to go to the general surgeon, who also retains many cases of lupus and syphilis. Nevertheless, while the numbers must be taken, with these and other qualifications, as only roughly approximate, they have, if in sufficiently large numbers, a certain value, especially when compared with those of other countries and other workers. The round number fifteen thousand has been chosen because, while it is large enough to avoid the errors of a small series, it allows the ratio per thousand to be readily computed. The cases are, however, consecutive; but those patients who were admitted into the hospital directly—*i.e.*, without passing through the out-patient department—are not included, so that many cases of rare diseases, such as xerodermia pigmentosa, sclerodermia, leprosy, etc., have passed under my cognisance, but are not mentioned here, the tables being simply an out-patient record. But if tables of hospital practice must be taken with qualifications, those of private practice are still more open to fallacy, and only in quite a moderate number of diseases can a comparison between their frequency in rich and poor be fairly made.

I have taken the patients of my last seven case books as the most representative of the class of cases which seek advice from a consultant with a special reputation for diseases of the skin. In one way, private statistics are more accurate, as the same patient would not be counted twice because he came in a different year. Readily curable and readily diagnosable cases are conspicuous by their absence or very small numbers.

Few cases come to me which have not undergone previous treatment by their family practitioner, his extremity being my opportunity. Partly for this reason and partly that a large proportion of persons, unless they are very wealthy, are unwilling to pay high fees for young children, unless the disease is very obstinate or disfiguring, the proportion of children in private consulting practice is very much less than would be anticipated, especially when compared with hospital practice. Allowing for all these modifying circumstances, of course there are differences in the relative frequency of skin diseases in rich and poor. What may be termed dirt diseases are, naturally, nearly absent, and even when present due to other causes. Thus pediculosis as it affects the head and body, which constitutes 4 per cent. in hospital practice, only amounts to one in one thousand in private. As regards pediculi pubis, owing to its being acquired chiefly in impure intercourse, it is even more common among the well-to-do; but this disease does not figure largely in my practice. Scabies, on the other hand, stands higher than would be expected in the list—over 1 per cent., as compared to 8 per cent. in public work; but this is because scabies in clean people, seldom develops to any great extent, and is so often unrecognised by the family practitioner, and it is chiefly as a result of errors of diagnosis that it comes under my cognisance. Tinea tonsurans also stands high—viz., as 2 per cent. to 10 per cent. This, however, under-estimates the frequency of it, as for the most part only the inveterate cases come under my notice in private. On the other hand, few cases of tinea circinata are in the list, as the family doctor cures it as easily as I should do. Impetigo contagiosa is a rare disease among the well-to-do; 1 per cent. as compared to 10 per cent. as the conditions for acquirement and propagation less often obtain. In lupus vulgaris, the difference in the frequency is much greater than it appears—viz., as 1 to 1·3 per cent. The reason is that, on account of its obstinacy, nearly all cases of lupus vulgaris among the “classes” have consultant advice, if they can afford it. Lupus vulgaris is really a rare disease among the wealthy; the majority of sufferers, even in private practice, belong to the less prosperous members of the community. Lupus erythematosus is quite on another footing; for whilst it is only half as common as lupus vulgaris at the hospital, there are nearly twice as many in private—another argument against the two diseases being etiologically identical. The difference in frequency between eczema and psoriasis in private and hospital practice is not great, and as regards psoriasis, is more than explained by the recurrences in hospital practice being counted as new cases, while the seborrhœides have not been differentiated from eczema in the hospital statistics; but lichen planus is twice as frequent in private—viz., as seven to three—because not only does it yield to treatment slowly, but it is often not recognised by the practitioner; possibly also the neurotic element in its etiology, finds freer scope among the *clientèle* of the consulting room.

Diseases involving a loss of hair figure very high in the private statistics—viz., 10 per cent. for ordinary forms of baldness and 3 per cent. for all forms of alopecia areata. This may be accounted for partly from this class of people being more sensitive on the subject; but probably a great part is personal, and the very large proportion—nearly 800 out of 5000—has had a lowering influence in the proportion of other diseases. Its rebelliousness to treatment is probably another reason of the frequency of alopecia areata,

as well as its conspicuous disfigurement ; but believers in a universal neurotic theory for all cases would probably explain it as due to the greater sensitiveness of the nervous system of the wealthier classes ; against this is to be set the preponderance of males. Rodent ulcer has also a high place—seven per thousand. As the dermatologist sees it, it is generally in an early stage, the more advanced cases usually resorting to the general surgeon. As might be expected, acne vulgaris and rosacea have a much higher ratio than in hospital patients, who as a class would not trouble about the slighter forms of those diseases. Many other comparisons might be made, but enough has been said to show that many other considerations come in besides the mere figures in comparing the two tables, and in estimating the relative frequency of diseases of the skin.

ANALYSIS OF 10,000 CASES OF DISEASES OF THE SKIN IN HOSPITAL OUT-PATIENT PRACTICE.

Class I. Hyperæmiæ :

Erythema 56

Class II. Exsudationes :

Erythema exsudativum, including 16 erythema iris . . . 114

Urticaria 440

Prurigo 21

Eczema, all forms 2630

Dermatitis repens 5

Impetigo contagiosa 961

Furunculus 32

Carbunculus 3

Herpes zoster 61

„ facialis 52

Pompholyx 11

Pemphigus 33

Dermatitis herpetiformis . . . 10

Hydroa vacciniformis 1

Psoriasis 718

Pityriasis rubra 14

„ rosea 40

Lichen planus 98

„ scrofulosus 14

„ pilaris 7

„ circinatus (sebor-

rhœic dermatitis) 46

Vaccination eruptions 8

Dermatitis, unclassified 24

„ artificialis 4

Drug eruptions 8

Class III. Hæmorrhagiæ :

Purpura 11

Class IV. Hypertrophieæ :

Ichthyosis and xerodermia . . . 54

Papilloma 7

Keratosis palmæ 5

Sclerodermia 2

„ circumscribed 6

Elephantiasis 6

Class V. and VI. Atrophies and pigment anomalies :

Chloasma 2

Nævus pigmentosus 2

Leucodermia 15

Class VII. Neuroses :

Pruritus 90

Class VIII. Neoplasmata :

(a) Degenerative :

Molluscum contagiosum 20

Xanthoma 3

(b) Infiltrating :

Lupus vulgaris 127

„ erythematosus 63

Scrofulodermia 15

Syphilis, secondary { . . . 540

„ tertiary {

„ congenital 73

Lepra 6

	M.	F.	Total.
Eczema, all forms	516	460	976
Dermatitis repens	2	2	4
Impetigo contagiosa	34	17	51
Furunculus	17	11	28
Carbunculus	3	—	3
Herpes zoster	12	6	18
„ facialis	4	8	12
„ progenitalis	6	2	8
Pompholyx	3	3	6
Pemphigus	3	7	10
„ foliaceus	—	1	1
„ vegetans	2	1	3
Dermatitis herpetiformis	20	10	30
„ æstivalis and hiemalis	5	16	21
Psoriasis	153	148	301
Pityriasis rubra	6	10	16
„ rosea	26	36	62
Lichen planus	52	61	113
„ variegatus	2	—	2
„ acuminatus	—	1	1
„ pilaris	2	1	3
„ circumscriptus of Vidal	4	2	6
Dermatitis venenata	12	14	26
„ Röntgen rays	1	—	1
„ medicamentosa	5	8	13
„ gangrænosa	1	5	6
Vaccinides	2	—	2
Class III. Hæmorrhagiæ:			
Purpura	2	1	3
Class IV. Hypertrophie:			
Ichthyosis	11	20	31
„ hystrix	2	1	3
Verruca	21	26	47
Clavus	5	3	8
Keratosis palmæ et plantæ	6	4	10
„ nigricans	1	—	1
Scleroderma diffusa	—	3	3
„ circumscripta	4	5	9
Class V. Anomalies of pigmentation:			
Lentigo	6	11	17
Chloasma	2	9	11
Arsenical pigmentation	2	3	5
Leuco- and melanoderma	7	14	21
Orange staining	3	—	3
Addison's disease	—	1	1

	M.	F.	Total.
Class VI. Atrophiae :			
Xerodermia pigmentosa	—	1	1
Striæ atrophicæ	1	—	1
Class VII. Neuroses :			
Pruritus, general	24	15	39
„ local	42	41	83
„ cerebri	5	3	8
Class VIII. Neoplasmata :			
(a) Degenerative :			
Molluscum contagiosum	3	9	12
Xanthoma	—	1	1
„ diabeticorum	1	—	1
(b) Infiltrating :			
Lupus vulgaris	13	36	49
Scrofulodermia	2	4	6
Erythema induratum	1	—	1
Lupus erythematosus	14	76	90
Syphilis	99	28	127
Lepra	10	4	14
(c) Benign :			
Keloid	7	4	11
Fibroma (single)	—	3	3
Myoma multiplex	1	1	2
Nævus pigmentosus	6	12	18
„ vascularis	4	8	12
Lymphangiectodes	1	2	3
Lymphangioma tuberosum multiplex	—	1	1
Adenoma sebaceum	—	1	1
Telangiectasis	7	38	45
(d) Malignant :			
Scirrhus, secondary	—	1	1
Epithelioma	5	3	8
Rodent ulcer	18	16	34
Paget's disease	—	1	1
Sarcoma	3	2	5
Mycosis fungoides	9	3	12
Furunculus orientalis	1	—	1
Papillary growths	1	2	3
Granuloma annulare	2	—	2
Class IX. Morbi appendicium :			
(a) Sweat-gland diseases :			
Miliaria and other sweat inflammations	5	15	20
Hyperidrosis	6	8	14
Bromidrosis	3	—	3
Hydrocystoma	1	—	1

	M.	F.	Total.
(b) Sebaceous gland diseases :			
Seborrhœa	18	63	81
Seborrhœides	97	115	212
Sebaceous cyst	—	2	2
Milium	—	2	2
Hypertrophied sebaceous gland	—	1	1
Comedones only	—	3	3
Acne vulgaris	89	222	311
„ rosacea	63	243	306
„ follicularis	—	6	6
„ varioliformis	4	—	4
„ keratosa	—	5	5
(c) Hair follicles and hair diseases :			
Tinea nodosa	2	—	2
Trichorrhæxis nodosa	—	2	2
Canities	12	18	30
Ringed hair	1	1	2
Hirsuties	—	87	87
Seborrhœic alopecia	159	307	466
Alopecia, other causes	7	20	27
„ areata, all forms	158	133	291
Sycosis	30	—	30
Folliculitis	17	7	24
(d) Nail diseases :			
Various	13	21	34
Class X. Hyphomycetic diseases :			
Tinea tonsurans	72	31	103
„ cruris	20	1	21
„ circinata	7	8	15
„ barbæ	16	—	16
„ versicolor	9	6	15
Class XI. Animal parasites :			
Scabies	45	13	58
Pediculosis capitis	1	4	5
„ corporis	4	7	11
„ pubis	2	—	2
Ixodes	1	—	1
Bug-bites	1	—	1
Unclassified	36	58	94
Totals	2240	2843	5083

CLINICAL EXAMINATION AND STAINING OF BACILLI AND FUNGI.

THIS SECTION IS BY MR. GEORGE PERNET.

Introductory Remarks.—To avoid repetition, cover-glass preparations are to be made in the following manner. A small quantity of the pus or a drop of the fluid to be examined is placed on a clean cover-glass. Another clean cover-glass is then placed on the material, and the two are gently pressed together, and carefully separated, so as to spread the pus or fluid as evenly as possible in a thin layer over the respective cover-glass surfaces. (Or two clean slides can be used in the same way.) The cover-glasses are then allowed to dry. The films are next fixed by passing the cover-glasses three times slowly through a spirit-lamp flame.

All stains should be freshly prepared, if possible, and filtered before using.

Before mounting in Canada balsam the preparations should be carefully dried, to get rid of all moisture, either with blotting (or filter) paper, or by holding the cover-glass, with film upwards, high up over a flame.

For other methods, staining of sections, and other details the following works can be consulted:—*The Essentials of Practical Bacteriology*, by H. J. Curtis, 1900; *Technik der Untersuchung histologischen*, C. von Kahliden, Jena, (1900), or Morley Fletcher's translation; *Methods of Pathological Histology* (1894); *Dermato-Histologische Technik*, Max Joseph und Georg Lœwenbach, 2nd Ed. (1901). Also the standard works on Bacteriology, etc., by Professors Edgar Crookshank, Rubert Boyce, Sims Woodhead, and others.

I. ACTINOMYCOSIS (*Actinomyces*).

The yellowish * grains examined in glycerine, the cover-glass being gently pressed on to the slide, show the characteristic rosettes of clubs.

Or prepare films and stain by (a) **Gram's Method**:

1. Two to five minutes in a saturated aniline gentian violet solution (or in a saturated methyl violet solution prepared with $2\frac{1}{2}$ per cent. aqueous carbolic acid).

2. Two minutes exactly in Lugol's iodine potassic iodide solution (iodine 1 part, iodide of potassium 2 parts, distilled water 300 parts = 1 : 2 : 300).

3. Rinse in absolute alcohol until no more violet colour comes away (5 to 10 minutes).

4. Wash in water. Dry.

5. Mount in xylol-Canada balsam.

After washing and drying (*vide supra* 4), films can be counterstained with a 5 per cent. watery eosin solution for half a minute; then 4 and 5 as above.

* According to Boström, the colour of the grains is by no means so uniform and constant as believed. They vary from grey to yellow, green, and brown.—Kanthack, in *Journ. of Path. and Bacteriology*, October, 1892, p. 146.

II. ANTHRAX (Malignant Pustule).

(Bacillus Anthracis.)

Clean the part with soap and ether, then make small punctures with a scalpel in the peripheral parts of the lesion. Examine the blood (cover-glass films). If seen early enough, the contents of the early bulla or pustule could be examined. Cases usually first come under observation when the central eschar has commenced to form or is formed. The bacilli are in great abundance under the eschar and about its edges.

Owing to the large size of this bacillus, it can be readily seen with an ordinary $\frac{1}{8}$ or $\frac{1}{6}$ (an oil immersion is not necessary), even without staining. (Nicolle and Morax.)

Cover-glass preparations can be stained by Gram's method (*vide supra* i.), or with carbol-fuchsin (*vide infra* v.).

A simple method is to immerse cover-glass for 5 minutes in common methyl violet solution, wash out most of the stain with absolute alcohol, clear with xylol, and mount in Canada balsam. (Barker.)

III. FAVUS (Achorion Schönleinii).

(*Vide infra* vii. as for Ringworm.)

When yellow discs and cups are present, the material on the under-surface of the crusts should be examined, as for ringworm scrapings.

IV. GLANDERS (Bacillus Mallei).

Cover-glass preparations of the pus do not stain by Gram's method.

Has special affinity for Löffler's methylene blue. To stain :

1. Five minutes in methylene blue.
2. Wash in water.
3. Dry.
4. Canada balsam.

NOTE.—MM. Nicolle and Morax point out that as the microscopical examination of the pus in man is frequently negative, it is necessary in such cases to make use of the inoculation test (male guinea-pigs). Migula (in *System der Bakterien*, vol. ii., p. 199) makes the same remark, adding that the differential diagnosis of the bacillus mallei can only be made with certainty by cultivation and inoculation (male guinea-pig).

V. LEPROSY (Bacillus Lepræ, or Hansen's Bacillus.)

A nodule is clamped at its base to render it bloodless (clamps have been devised for this purpose, but carefully squeezing with curved forceps will be found sufficient). It is then incised with a scalpel. Clear fluid then oozes out, and its quantity can be increased by pressure about the base of the nodule. (It is important not to get blood mixed with the exuding fluid.) A clean cover-glass is applied to the fluid, and films prepared (*vide* Introductory Remarks).

Similarly, films may be prepared with the secretion of ulcers, or with the scrapings of broken-down mucous membrane lesions (uvula, etc.).

The bacilli readily stain by the following methods :

a Ziehl-Neelsen Method.

1. Five minutes in warm carbol-fuchsin solution (fuchsin 1, alcohol 10, concentrated carbolic acid 5, distilled water 100). The solution is heated in a test tube over a spirit lamp flame, but *not boiled*, and poured on to cover-slip held by Cornet forceps.

2. Wash in water.

3. Place in 5 per cent. watery sulphuric acid, or a 15 per cent. watery nitric acid solution, until the film is completely decolorised.

4. Wash in water. (If the pink colour reappears the cover-slip can be returned to the sulphuric acid solution, and back to water.)

5. One to two minutes in a 1 per cent. watery methylene blue solution.

6. Wash thoroughly in water, and carefully dry.

7. Mount in Canada balsam.

β Gram's Method can also be employed (*vide supra* i.).

There are other methods, such as Gabbet's, etc.

VI. MADURA FOOT (MYCETOMA) (*Streptothrix Maduræ* of Vincent).

(As for *Actinomyces*, *vide supra* i. See also page 1273.)

VII. RINGWORM (1. *Microsporon Audouini*. 2. *Trichophyton Megalosporon Endothrix*. 3. *Trichophyton Megalosporon Ectothrix*) *Tinea Tonsurans*.

Broken or short stumps should be selected with a lens, and placed on the end of a slide and treated with a drop or two of ether, to get rid of fat, ointment, etc. The hairs are then moved on to the centre of the slide with a needle on holder, and examined in a drop of liq. potassæ B.P., the cover-glass being gently applied. As the preparation "clears", the fungus will be readily seen.

If a permanent preparation is required, it can be stained as follows :

a Adamson's Method.*

When the preparation treated in the above manner has reached the desired stage of "clearing," gently wash under cover-glass a few drops of 15 per cent. mixture of alcohol in distilled water. The cover-slip is then removed. The specimen (either on slide or cover-glass) is treated with more of the 15 per cent. alcohol mixture, to get rid of the excess of potash, and it is then fixed by drying carefully over the flame of a spirit lamp.

Then—

1. Stain in gentian anilin violet for 15 to 60 minutes.

2. One to five minutes in Gram's iodine solution.

3. Decolorise in anilin oil 2 or 3 hours, or longer.

4. Remove anilin oil with blotting paper, and

5. Mount in Canada balsam.

β A more rapid method is the following of Brongersma, of Amsterdam.

1. Place stump to be examined on a slide, and get rid of fat with ether.

2. Add a little anilin gentian violet solution. (5 minutes.)

* *Brit. Journ. Derm.*, vol. vii. (1895), p. 376.

3. Dry with blotting (or filter) paper carefully, and add potassium iodide iodine solution. (1 to 5 minutes.)

4. Dry as above, then add a drop or two of aniline oil, move the slide, then add a drop or two of anilin oil, to which a drop of hydrochloric acid has been added.

5. When as much stain as possible has been got rid of, again add anilin oil

6. Xylol.

7. Mount in Canada balsam.

(The writer has found that stumps previously clarified in liq. potassæ B.P. can be made use of, and give good results by this method.)

(Both the above are modified Gram methods.)

Tinea Circinata.

With a scalpel, thoroughly scrape the affected skin, and treat the scrapings in the same way as above, the scales being fixed by passing three times through a spirit lamp flame.

Tinea Unguium.

Scrape the affected nail thoroughly with the sharp edge of a slide. Clarify in a 40 per cent. solution of potash. This gives quicker results than the weak B.P. solution, but in any case a thorough and prolonged examination should be made if necessary.

To stain (*vide supra*).

VIII. TUBERCULOSIS (Bacillus Tuberculosis, or Koch's Bacillus).

(Same methods of staining as for **Bacillus Lepræ**, *vide supra* v.)

NATURAL MINERAL WATERS AND SPAS.

BOTTLED MINERAL WATERS.

The dermatologist makes use of the purgative, alkaline, and ferruginous natural mineral waters in the same way, and for the same purposes, as the general physician. The bromo-iodine and arsenical waters are of more special application.

PURGATIVE WATERS.

The directly purgative waters owe their action chiefly to sulphates of soda and magnesia in varying proportions. The principal are **Püllna**, **Friedrichshall**, **Hunyadi-Janos**, **Æsculap**, **Apenta**, and **Victoria Ofener**. Of these I use Friedrichshall for a mild and Hunyadi-Janos for a stronger aperient, but some prefer Püllna to Friedrichshall, as the latter contains a large quantity of chloride of sodium, which they think is injurious in skin diseases; but this is not a sound objection, in my opinion. When the sulphates of magnesia and soda are in nearly equal proportions, the taste is much less objectionable than when one or other preponderates. For this reason I prefer Hunyadi-Janos, and the less known Hunyadi-Taszlo, which is a trifle stronger, to the

more powerful *Æsculap* and *Victoria Ofener*; the last being the strongest purgative water known, but it contains a large preponderance of sulphate of magnesia, and is proportionately nasty. The "*Franz Josef*" spring is also a very strong aperient, and contains equal parts of the sulphates of soda and magnesia, 240 in 10,000. The dose of nearly all these is a wineglassful and upwards, freely diluted with tepid water, and taken in the morning before breakfast. They are especially useful in fæcal accumulation, which always aggravates, even when it does not produce, inflammatory diseases, such as eczema, acne, etc.

ALKALINE WATERS.

These are very numerous. Those of **Vals**, **Vichy**, **Ems**, and **Karlsbad** may be specially mentioned. Vals and Vichy are simply alkaline, and owe their properties chiefly to the bicarbonate of soda they contain. Those of Vals are the strongest, especially the *Magdeleine*, *Précieuse*, and *Désirée* springs. Those of Vichy are more generally employed, and though there are several springs they are practically of the same composition and value. They are useful to many dyspeptics with strongly acid urine, and in any skin disease, such as eczema or psoriasis, in which that condition is present; they should not, however, be continued too long, or they may aggravate instead of alleviating. A tumblerful of either Vals or Vichy may be taken twice a day.

Karlsbad Sprudel salt is laxative as well as alkaline; its chief constituents are sulphate and bicarbonate of soda, with a moderate quantity of chloride of sodium. It is a great favourite of mine in gouty states, and inactivity of the liver. A heaped teaspoonful of the dried salt dissolved in at least two-thirds of a tumblerful of warm water, and taken before breakfast, generally gives one or two free evacuations, and there is no further trouble. It may be taken two or three times a week.

FERRUGINOUS WATERS.

The waters from *Spa*, *Pyrmont*, and *Schwalbach* are those chiefly employed.

Spa.—The *Pouhon* and *Pouhon du Prince de Condé* are the chief iron springs. That from the *Prince de Condé* is the only one imported. The iron is in the form of bicarbonate, along with sodic, magnesian, and calcic bicarbonates. Owing, however, to the lime being in small quantity, it has the great advantage of retaining its iron for a long period after being bottled; while most ferruginous waters contain a great deal of lime, which leads to the speedy deposition of the iron from solution.

Schwalbach.—The water from the *Stahlbrunnen* and *Weinbrunnen* is imported into England. The *Stahlbrunnen* is stronger and more stable from its containing less lime.

Pyrmont.—The *Trinkbrunnen* and *Neubrunnen* are a little stronger as regards iron than the respective springs above mentioned of *Schwalbach*, but they contain enormous quantities of lime.

On the whole, therefore, the *Spa* waters are the best; from one to four tumblers or more a day may be given in anæmic and chlorotic states, or whenever iron is indicated. They are especially suited for patients with

weak digestions, who do not tolerate iron in the cruder forms, and for whom expense is not a great object. A fair imitation may be made by adding ten minims of the liquor ferri perchloridi B.P. to half a pint of seltzer water.

Flitwick.—This is a remarkable spring in Bedfordshire, containing rather less than 170·8 grains of persulphate of iron to the gallon. It keeps well in bottles, but whether, as asserted, the iron is in a readily assimilable form requires further experience ; it is well worth trying.

ARSENICAL WATERS.

The chief are those of Levico, Roncegno, La Bourboule, and Royat.

La Bourboule is a sodio-chloruretted and bicarbonated arsenical water, containing twenty-eight milligrammes of sodic arseniate to the litre, or nearly two grains to the gallon. The other salts both of this and Royat are very similar to those of the blood. A large tumblerful is the average dose.

Royat.—The Saint Victor spring is the strongest ; it contains only one-sixth of the quantity of arsenic contained in the waters of La Bourboule, but has more iron.

Levico is said to be the strongest arsenical water known, containing '086879 arsenious acid in 10,000 parts, or about one-twelfth of a grain per pint ; it also has a considerable quantity of iron in the form of persulphate. The usual dose is a tablespoonful.

Roncegno is very similar to Levico, and the dose is the same. These waters are used chiefly in anæmia and psoriasis, and, like the ferruginous waters, are adapted for weak digestions and long purses.

BROMO-IODINE WATERS.

These are suitable for strumous and syphilitic subjects. The chief are those of Kreuznach, Purton, and Woodhall. The last is the strongest known, and contains nearly five grains of bromine and two-thirds of a grain of iodine to the gallon.

THE SPAS.

Far more efficacious than swallowing the imported waters is a visit to the spas themselves. It must, however, be borne in mind that there are many other elements beside the composition of the waters which make for success in the restoration of the patient. Among these are the climatic conditions, and the consequent change of air and scene, the regimen and regular hours, as well as the withdrawal from many of the temptations of society life. At some spas, the topical use of the baths plays an important part ; and last, not least, is the influence of hope and faith engendered in the carrying out of a new treatment in which there appears to be a little mystery, and in which the very expense and trouble stimulate the patient to do all that he can to get well, instead of carrying out the treatment in the half-hearted way, in which patients at home are too apt to subordinate the means of cure to their engagements and convenience. Although, therefore, to such self-indulgent patients, a suitable spa may be the best means of cure, it must not

be supposed that they are necessary to success, provided that a patient will give himself up to treatment at home, as completely as may be necessary for the kind of case.

A few of the principal spas will be specially noticed in alphabetical order.

Aix-la-Chapelle, Germany, is in a bowl-shaped valley in the Lower Rhine, near the Belgian and Dutch frontiers. The climate is mild, and the season is from May to October. There are four chief springs: the Kaiserquelle, the Quirinusquelle, the Rosenquelle, and the Corneliusquelle. They are hot, sulphuretted waters, with a fair amount of chloride of sodium. The Kaiserquelle, 131° F., is the hottest; the Corneliusquelle, 113.60° , the least so; in other respects, they are practically the same. They are chiefly employed for psoriasis and tertiary syphilis, for the latter in conjunction with mercurial inunctions. The system employed has obtained great celebrity and success, and is thus described by Berkeley Hill in his work on Syphilis:—

“The patient is restricted to a tolerably precise regimen, which excludes bodily fatigue, excess of all kinds, and enforces regular hours of rest and gentle exercise. The diet is limited; many articles, such as fruit, likely to cause relaxation of the bowels, are forbidden, while milk is largely prescribed. The daily course consists of a bath in the hot sulphur water, and during the sweating thus induced, a drachm of mercurial ointment is rubbed by an attendant into the skin of the patient. In this condition he remains for one or two hours, drinking a pint or more of the sulphur water during his sweat. He then rises, walks out, dines, and then walks again if weather permit. In the evening he goes early to bed, and thus prepares himself for a repetition of the treatment next day. Great care is taken to prevent salivation, both by watching the effect of the treatment and by insisting upon the use, several times daily, of an alum or other astringent mouth-wash. Tonics are also administered to weakly persons, and the treatment is modified in its strictness to suit their condition. The course occupies usually six or seven weeks, comprising forty to fifty rubbings. In this time, all symptoms have usually disappeared, at least for a time, and the patient is dismissed by his physician, with an injunction to return for another course after an interval of two months.”

Aix-les-Bains, France, on Lake Bourget, in a pleasant valley. The climate is good, but hot in the season (July and August), and May, June, and September are preferable. The waters are from two chief springs, the Eau de Soufre and the Eaux d'Alun (so-called), which are practically identical, and, like those of Aix-la-Chapelle, hot and sulphurous. Their temperature is 112° to 116° F. There are three springs at Marlioz, about a mile distant from Aix-la-Bains, which are more strongly sulphurous, but their temperature is only 57° F. The neighbouring springs of Challes are of similar characters. Aix-les-Bains is chiefly resorted to in chronic gouty states, and is useful in gout, eczema, or psoriasis.

There are several sulphur springs in the Pyrenees, of which Eaux-Bonnes, Eaux-Chaudes, and Barèges may be specially mentioned. The first ones lie some 2,500 feet above the sea, and the stability of the sulphurous ingredients are said to be a distinguishing feature; it is powerfully diuretic, and is taken more for chronic lung than skin affections.

Contrexéville is prettily situated in the heart of the Vosges mountains,

about 1,000 feet above the sea-level. There are five springs, of which the Pavillon is the most important and typical. The waters are alkaline, with a preponderance of lime salts. They contain also a little iron; they are not highly mineralised, so that large quantities must be imbibed. They are chiefly used for renal and bladder troubles, especially calculi, and for gouty states; and I have found them very useful for pruritus ani, due to hepatic disorder as it usually is.

Ems, Germany.—The waters are alkaline, chiefly from bicarbonate of soda, and also contain some common salt. The chief springs are the Kränchen and Kesselbrunnen, and they are practically identical in composition, but the temperature is 115° F. in the Kesselbrunnen and only 85° at the Kränchen. The first is used mostly for baths, the other for drinking. The waters are especially useful in chronic bronchial and gastric catarrh, and are very beneficial in some cases of chronic eczema. The season is from May to September, July and August being the principal months. The air is bracing and pure, but in summer it is very hot.

Karlsbad, Austria, is a very celebrated spa, picturesquely situated 1,000 feet above the sea-level. The principal springs are the Sprudel, 165° F., the Mühlbrunnen, 126° F., and the Schlossbrunnen, 122° F. They contain sulphur and bicarbonate of soda, and a moderate quantity of chloride of sodium. They are especially useful in gouty conditions with constipation, and are much resorted to for obesity, for sluggish conditions of the liver, gall-stones, and diabetes. The season is from April to October, but it is very hot in the summer months, and many, therefore, prefer Marienbad, in which the climate is more bracing, as it lies higher, but the waters are cold, and nearly twice as strong as those of Karlsbad.

Kreuznach, in the valley of the Nahe, in Germany, has a warm, dry climate, and is noted for its bromo-iodated waters, which are the strongest, except Hail, in Austria, but not to be compared to those of Woodhall. The principal spring for drinking is the Elisenquelle. The temperature is 54.5° F. The principal constituents are chlorides of sodium, calcium, and magnesium, and bromide and iodide of magnesium, but these last are in very small quantity. The diseases for which the Kreuznach waters are most useful are tertiary syphilides and strumous diseases.

La Bourboule, Puy-de-Dôme, near Royat, France, is situated at a height of 2,600 feet above the sea-level. It is noted for being one of the strongest arsenical waters known. The composition of the waters and their use have been described under "Bottled Waters." The chief spring is the Choussy-Perrière. The season is during July and August. It is especially useful in psoriasis.

Levico, in the South Tyrol, near Trient, 4,880 feet above the sea-level, is not only stronger in arsenic than La Bourboule, but also contains pools with some persulphate of iron. There are two springs: the milder contains 8 grains of proto- and persulphate of iron and $\frac{1}{120}$ of a grain of arsenic to the pint, while the strong contains 34 grains of iron salts and $\frac{1}{12}$ of a grain of arsenic per pint. The water is brought down in pipes from the mountains behind Levico.

Louèche, or Leuk, in the canton of Valais, in Switzerland, is 4,500 feet above the level of the sea. The quantity of salines in it is small, and it is

chiefly useful as a thermal bath, the principal spring, St. Laurent, being 144° F. It is of value especially in a disease like psoriasis, in which prolonged soaking is beneficial, while its high altitude gives it claims as a sanatorium.

Marienbad, Bohemia, is about twenty-five miles from Karlsbad, and lies 900 feet higher, being at an altitude of 1,900 feet; its climate, therefore, is cooler. The waters have the same character as those of Karlsbad, but are much stronger both in sulphate and bicarbonate and chloride of soda, and are therefore more distinctly purgative. The chief springs are the Kreuzbrunnen and the Ferdinandsbrunnen, the latter being the stronger. It is recommended for the same class of cases as Karlsbad, when a more decided aperient action and a more bracing climate are required. Eruptions of gouty origins are especially suitable.

Mehadia, or the waters of Hercules, and **Pystjan**, both in Hungary, also have a high reputation, largely earned by the vigorous thermal treatment employed, the temperature of the springs at both places being very high.

Plombières, in the Vosges, is another lofty sanatorium, being 1,310 feet above the level of the sea, and has a proportionately bracing climate. Its waters resemble those of Bath. They contain only a small quantity of salts, but the temperature ranges from 66° to 143° F., the hottest spring in Bath being 117° F. There is, however, an arrangement for "continuous baths," and it is, therefore, especially suitable for pemphigus and chronic psoriasis. One of its springs contains a minute quantity of arseniate of lime.

Roncegno is about an hour from Trient in the Tirol. It is situated about 1,600 feet above the sea, and contains in a litre of water '10960 of a gramme of arseniate of soda and '11588 of arsenious acid, with small quantities of cobalt and nickel, 3 grammes of oxide of iron, and a little phosphate and sulphate. It is therefore very like Levico, which is not far off. The water is brought down from the neighbouring Mount Tesobo. The dose is a tablespoonful.

Royat, in the Puy-de-Dôme, is at an altitude of 1,400 feet, and its salts so nearly approach those of the blood that Gubler calls them "mineral lymph." The principal springs are the César, Saint-Mart, and Saint-Victor. The first is little more than a pleasant table water, and its temperature is 84° F. All have some arseniate of soda; that of Saint-Victor is the strongest, both in arsenic and iron, besides containing a small quantity of lithia chloride. They are, therefore, proportionately useful in anæmic states, and in gouty and rheumatic eczema and psoriasis. The season is from June to September.

Schinznach, Canton Aargau, Switzerland, are also sulphurous, and are much frequented, especially by French people. It lies 1,150 feet above the sea, in the valley of the Aare, and contains 37'8 cubic centimetres H_2S and 90 CO_2 per litre. The other constituents are unimportant.

Schwalbach, in Nassau, is very much like Spa, both in altitude and in its waters, with rather more iron, the Stahlbrunnen containing $5\frac{1}{8}$ as against 3 of the Pouhon.

Spa, in Belgium, contains some of the best chalybeate springs, the Pouhon being the strongest, containing '375 grains of carbonate of iron

in sixteen ounces, or $3\frac{3}{4}$ grains to the gallon. It has an altitude of 1,030 feet, and is beautifully situated in a valley surrounded by pine-clad forests.

Vals, in the Ardèche, has an altitude of 2,475 feet. The chief constituent of the springs is bicarbonate of soda, the Magdeleine containing no less than 509 grains to the gallon, the two other principal springs, Précieuse and Désirée, containing 100 grains less, while the strongest spring in Vichy (Célestins) contains 357 grains to the gallon.

Vichy, in the Allier, at the foot of the Auvergne Mountains, is one of the most celebrated alkaline spas. The springs resemble each other in the large quantity of bicarbonate of soda they contain, and are largely resorted to in rheumatic and gouty states. The Grande-Grille and the Célestins are the best known, containing more bicarbonate of soda and potash than the others. Gouty eczema is especially likely to be benefited by them.

The most celebrated English spas are :—

Bath, altitude 100 feet, celebrated for its hot springs, the hottest being 117° F. The mineralisation is rather scanty, but the baths are useful in psoriasis and rheumatism.

Buxton is in a valley surrounded by hills, at an altitude of 1,000 feet above the sea-level; its climate, therefore, is more bracing than that of Bath. On the other hand, the temperature of the waters is only 82° F., though they are artificially raised to 95° F. The waters are, like those of Bath, only slightly mineralised.

Flitwick has a strong persulphate of iron spring; it has not much accommodation for visitors as yet. (*Vide* "Bottled Waters.")

Harrogate does not lie quite as high as Buxton, and is celebrated for the number and variety of its springs, of which there are nearly one hundred. Its sulphur springs are the most celebrated, but it also contains chalybeate and saline spas. It is useful in some gouty eczemas, but, like all sulphur springs, must be used with caution, and under expert supervision.

Purton, in Wilts, is a bromo-iodine spring, and useful for strumous subjects, but much weaker than the

Woodhall Spa, in Lincolnshire, which is the strongest bromo-iodine spring known, containing $5\frac{1}{2}$ grains of iodine, some of which is free, and 82 of bromine, to 10 gallons. It contains also a large quantity of chlorides. It is especially useful for strumous, syphilitic, and rheumatic subjects, and is superior to the more widely known Kreuznach for such affections.

Strathpeffer, in Ross-shire, has lately come into note as a sulphur spring, though it also contains a valuable chalybeate spring, containing about $\frac{1}{3}$ of a grain of carbonate of iron in the pint, with a large quantity of carbonic acid. The sulphur springs are some of the strongest known, containing more sulphuretted hydrogen than any of the Harrogate springs, and more uncombined sulphur than either Harrogate or Aix-la-Chapelle, but the old sulphur spring of Harrogate contains nearly four times as much alkaline sulphide. The climate is mild, and the scenery beautiful. The waters are useful for the same class of cases as those of Harrogate.

Other mineral springs of Great Britain are :—

1. Sulphurous : **Moffat** and **Cheltenham**.
2. Saline : **Cheltenham**, **Scarborough**, and **Leamington**.
3. Chalybeate : **Tunbridge**, **Cheltenham**, and **Brighton**.

FORMULÆ.

BATHS.

Simple and medicated baths are largely used in the treatment of skin diseases.

1. **Simple Vapour and Hot-air (Turkish) Baths** find but little employment in skin diseases, and would generally be injurious, but simple water baths are often used, both for their cleansing and soothing effects. They are, however, almost always injurious in eczema. The following shows the temperature range of the different varieties :—

Bath.	Water.	Vapour.	Air.
Cold	40° to 65° F.
Cool	65° to 75° F.
Tepid	85° to 95° F.
Warm	95° to 100° F.	100° to 115° F.	110° to 120°
Hot	100° to 110° F.	115° to 140° F.	120° to 180° or more.

2. **Wet Pack.**—The wet pack is a modified bath, which is especially useful in extensive psoriasis to remove scales and to diminish hyperæmia. A sheet is wrung out of cold or warm water, and the patient wrapped in it, then rolled up in a blanket ; after remaining thus for from twenty to thirty minutes, or even more, the sheet is removed, the body rubbed dry, and then oil or a suitable ointment rubbed in to prevent the skin from cracking.

3. **Oil Packing.**—In highly inflammatory conditions, such as eczema, or pityriasis rubra, or acute inflammatory psoriasis, oil is preferable to water. Lint or linen dipped in the best olive oil is bandaged on, or the bandages themselves may be dipped in the oil, which must be quite fresh, as the least rancidity would produce irritation.

4. **Medicated Vapour Baths.**—These are generally either calomel or sulphur. The calomel vapour bath is very valuable in the treatment of syphilis ; various forms of apparatus are sold for home use. From 15 to 30 grains of calomel may be volatilised with just sufficient water to excite the skin to moderate action. In public baths, the preliminary steaming is often overdone ; the consequence is, that patients often faint during their use. At University College Hospital I find that the heat required to volatilise the calomel is enough to excite sufficient perspiration in most people, and since the steaming has been omitted, faintness is not induced. For sulphur baths 1 to 2 ounces of sublimated sulphur may be used, but this is rarely required for skin diseases, but is useful for rheumatic people, and is sometimes used for syphilitics to slightly irritate the skin, if there is any doubt about the disease having been sufficiently treated.

Medicated Liquid Baths are used for a variety of diseases, and are of divers kinds. The proportions mentioned below are those used at University College Hospital since they were first started by Tilbury Fox, and quoted from his work. They are estimated for a full-length bath with 30 gallons of

water at a temperature of 90° to 95° F. The emollient, alkaline, and sulphuret of potassium baths are the most commonly prescribed.

1. **Emollient Baths** are made of : (a) Bran 2 to 6 lbs., (b) potato starch 1 lb., (c) gelatine 1 to 3lbs., (d) linseed 1 lb., (e) marshmallow 4 lbs. ; (f) size 2 to 4 lbs., to 20 or 30 gallons of water. Use in all erythematous, itchy, and scaly diseases.

2. **Alkaline.**—(a) Bicarbonate of soda $\bar{3}$ ij to $\bar{3}$ x, (b) carbonate of potash $\bar{3}$ ij to $\bar{3}$ vj, (c) borax $\bar{3}$ ij. The bicarbonate of soda may be used with bran liquor, made by infusing a gallon of bran. Use in eczema, psoriasis, urticaria, lichen, and prurigo, where there is much local irritation.

3. **Acid.**—Nitric or hydrochloric acid $\bar{3}$ j, or a mixture of nitric acid $\bar{3}$ j, or more, with hydrochloric acid in like quantity to 30 gallons of water. Use in chronic lichen and prurigo. The bath should be of porcelain.

4. **Iodine.**—Iodine $\bar{3}$ ss, iodide of potassium $\bar{3}$ ss, with $\bar{3}$ ij of glycerine, or iodine $\bar{3}$ j or more, with $\bar{3}$ j or $\bar{3}$ ij of liquor potassæ to 30 gallons of water. Use in scrofulous eruptions, in syphilis, and in squamous diseases.

5. **Bromine.**—20 drops of bromine with $\bar{3}$ ij bromide of potassium. Use as the iodine.

6. **Sulphuret of Potassium.**— $\bar{3}$ ij to $\bar{3}$ iv to each bath. The balneum sulphuris co. of Startin, senr., is made with $\bar{3}$ ij of sulphur (precipitated), $\bar{3}$ j of hyposulphite of soda, and $\bar{3}$ ss of dilute sulphuric acid, with a pint of water; added to the usual 30 gallons of water. Use in itch, in chronic eczema, lichen, and psoriasis.

7. **Mercurial.**—Bichloride $\bar{3}$ j to $\bar{3}$ ij, with $\bar{3}$ j of hydrochloric acid ; biniodide of mercury $\bar{3}$ j, with $\bar{3}$ ij of chloride of sodium. Use in pityriasis rubra and the syphilodermata, especially with ulceration.

POULTICES.

Poultices in the time-honoured form of bread and linseed meal should never be employed, as unless used most carefully they are simply cultivating media for germs. When warmth and moisture are required, the most unobjectionable forms are boric acid lint soaked in boiled water at the desired temperature, or Gamgee tissue soaked in carbolic solution and covered with some waterproof. For simple moisture, the boric acid starch poultice, a favourite application of Jamieson for softening crusts and soothing inflammations of the skin, may be recommended.

BORIC ACID POULTICES.

R. Acidi Borici $\bar{3}$ ii

Sig.—Add a teaspoonful of the powder to a tablespoonful of cold water starch, mix with a little cold water, then pour in a pint of boiling water, and stir till melted ; let stand till cold ; spread the cold starch thickly on pieces of cotton, cover with muslin, and apply to the part, changing the poultices every few hours.—ALLAN JAMIESON.

SOAPS.

Much has been written of late years on the composition of soaps, both for the toilet and for therapeutic formulæ. For these purposes, chiefly through the advocacy of Unna, an excess of fat, superfatted soaps, as they are called,

have come into vogue. They find their chief use when the skin is very thin, as on the face, or when there is a tendency to eczema, but are inferior as cleansing agents to a well-made neutral soap. The importance of medicated soaps in dermato-therapeutics, as soaps are ordinarily used, has been much exaggerated, in my opinion. When one considers how little of the medicament is contained in the few grains of soap brought into contact with the skin in an ordinary washing, for how short a time it remains there, and how carefully it is rinsed and wiped off immediately afterwards, the therapeutic result can at best be but slight and transitory. Of course, if applied with great thoroughness and left in contact with the skin for a considerable time, some result may be obtained, but complicated with the irritation which the prolonged application of soap nearly always produces, and in my opinion the same medicaments could have been applied more efficiently in other ways. With regard to the so-called antiseptic soaps still greater fallacies exist. Those said to contain perchloride of mercury, for instance, rarely contain that salt, as its composition is generally altered in the manufacture. Curzio of Naples made experiments on the effect of this class of soap on the growth in cultures of staphylococcus aureus, and his results are significant :—

Sublimated 1 per cent. soft soap was neither aseptic nor antiseptic even after 24 hours' contact. Sublimated 1 per cent. hard soap required 24 hours continuous contact to have any real antiseptic value. Carbolic 10 per cent. soap had less aseptic, and no antiseptic value. Salicylic acid 3 per cent. and boric acid 5 per cent. are truly aseptic, and are both strongly antiseptic, boric acid being the weaker, and they prevent bacterial development in a few minutes.

Of course, so far as these various soaps, whose name is legion, act at all they act in the right direction, but the practitioner should not deceive himself as to their real efficacy. The chief makers of this class of soap in England are Field, Midgley, Price, and Yardley, and in Germany, Beiersdorf, Eichhoff, and Stiefel, whose soaps can also be obtained in this country.

CAUSTICS.

1. **Arsenic.**—Arsenious acid gr. 10, artificial cinnabar $\bar{3}$ ss, rose ointment $\bar{3}$ ss (Hebra's Cosmé's paste); or it may be used as a powder with white sugar instead of the ointment.

2. Calomel $\bar{3}$ ijss, bisulphuret of mercury $\bar{3}$ ij, arsenious acid $\bar{3}$ j (Startin, senr.). Use in lupus and strumous ulcers, rodent ulcers, and syphilis.

3. **Chromic Acid.**—A saturated water solution is excellent for warts. Gr. 5 to gr. 30 to water $\bar{3}$ j for superficial glossitis, syphilitic or otherwise, and for syphilitic papilloma of tongue.

4. **Mercury, Acid Nitrate.**—B.P. solution; or pure mercury $\bar{3}$ j, nitric acid (sp. gr. 1.4) $\bar{3}$ ij (Startin, senr.). Use in lupus, syphilis, verruca necrogenica, nævus, etc. The addition of $\bar{3}$ j of arsenious acid to Startin's formula is sometimes made.

5. Mercury bicyanide gr. 2 or more to $\bar{3}$ j of water. Paint it on in acne osacea, and after two or three minutes wipe it off (Burgess).

Mercury Red Iodide.—Gr. 10 to gr. 20 to glycerine $\bar{3}$ ss. Use in lupus and syphilis.

Mercury Perchloride $\bar{3}$ j, collodion $\bar{3}$ vj. Lupus and syphilis (Startin, senr.).

6. **Barium**.—Barium sulphide $\mathfrak{z}\text{ij}$, zinc oxide and starch each $\mathfrak{z}\text{ij}$. For a depilatory :—Make into a paste with water, and put on thin coating for ten to fifteen minutes ; then clean off and apply bland ointment (Duhring) ; or the same proportion of sulphide of sodium may be used ; but depilatories are not recommended ; they often excite dermatitis, and are no better than shaving.

7. **Iodine**.—Liq. iodi fortis B.P. (1 in 8 of spirit) or a watery solution, iodine $\mathfrak{z}\text{ss}$, potassium iodide $\mathfrak{z}\text{j}$, water $\mathfrak{z}\text{j}$. In glandular enlargements or lupus. **Coster's paint**, or paste, is iodine $\mathfrak{z}\text{j}$ or $\mathfrak{z}\text{ij}$ to colourless oil of wood tar $\mathfrak{z}\text{j}$; apply with a stiff brush. Excellent for the early stages of ringworm. Marrant Baker prefers creasote, and Aldersmith oil of cade, to the ol. picis liquid. Vasogen-iodine 10 per cent. does not stain.

8. **Lime. Vienna Paste**.—Equal parts of unslaked lime and caustic potash ; make into a paste with alcohol immediately before using. For lupus vulgaris, scrofuloderma, and syphilis.

9. **Potash, Caustic**, solid stick, or saturated solution. For same as Vienna paste. Weaker solutions gr. 10 to 30 to $\mathfrak{z}\text{j}$ may be painted on, and washed off in a few seconds, to clean the surface, in chronic inflammations, *e.g.*, some cases of sycosis.

10. **Silver Nitrate**, solid stick ; for lupus vulgaris, to be bored forcibly in, so as to plough up the diseased tissue, but it is very painful. Gr. 5 to gr. 40, in spirit of nitrous æther $\mathfrak{z}\text{j}$, may be painted on in some cases of eczema and pruritus, especially about the anus and genitals, and in some other chronic inflammations.

11. Chloride of zinc $\mathfrak{z}\text{xvj}$, powdered opium $\mathfrak{z}\text{jss}$, hydrochloric acid $\mathfrak{z}\text{vj}$, boiling water to $\mathfrak{z}\text{xx}$; dissolve. To the solution add 1 drachm of wheaten flour ; mix smoothly in a mortar, and heat over a water bath until of a proper consistence (Middlesex formula). Lupus, epithelioma, rodent ulcer, etc.

12. Zinc nitrate 1 part, bread mass 2 parts. For same.

13. **Salicylic Acid**.—Glycerin $\mathfrak{z}\text{j}$, salicylic acid enough to make a thick cream. To be applied on lint or painted on. For warts, lupus, and epidermic thickenings ; $\mathfrak{z}\text{j}$ of carbolic acid or creasote may be added to diminish the painfulness of the application.

14. **Zinc and Mercury**.—Starch 37 parts, wheat flour 112 parts, perchloride of mercury 1 part, dry chloride of zinc 110 parts, iodol 10 parts, croton chloral 10 parts, bromide of camphor 10 parts, crystallised carbolic acid 10 parts. Mix them in a mortar in powder, then add gradually enough distilled water to form a homogeneous paste of the consistence of putty. It will keep a long time. The hands should be wetted when applying it, and the paste allowed to remain on from six to twenty-four hours (Jules Félix).

15. **Camphor, Carbolic Acid**.—Equal parts of camphor and carbolic acid are rubbed together in a mortar, and the result is a thick fluid. A good superficial caustic for lupus erythematosus and similar conditions. (Blackfriars Skin Hospital.)

LOTIONS.

STIMULANT AND ANTISEPTIC LOTIONS.

Mercury.

1. Perchloride of mercury gr. 4, diluted nitric acid ℥j, diluted hydrocyanic acid ℥j, glycerin ℥ij, water ℥viiij (Startin, senr.'s, lotio hydrargyri bichloridi). Use in syphilitic eruptions, pityriasis versicolor, chloasma, freckles, etc.
2. Perchloride of mercury gr. 1, distilled water ℥ij=1 in 1,000 nearly. For syphilitic sores.
3. Perchloride of mercury gr. 8, distilled water ℥iv, sulphate of zinc and acetate of lead of each ℥ij, alcohol ℥ij. Paint on cautiously. Hardy's lotion for freckles.
4. Perchloride of mercury gr. 6, diluted acetic acid ℥ij, borax ℥ij, rose-water ℥iv. For freckles (Bulkley). Apply twice a day.
5. Perchloride of mercury gr. 2, tincture of benzoin ℥ss, almond emulsion ℥j. For freckles (Duhring).

Silver.

6. Nitrate of silver gr. 2 to 10, water or spirit of nitrous æther ℥j. For eczema, erythemata, and pruritus vulvæ et ani. Protargol gr. v to gr. x, distilled water ℥j. For prurigo, especially on the face.

Soft Soap.

7. Oil of cade, soft soap, and alcohol, equal parts, oil of lavender ℥jss. (Anderson). Similar to Hebra's tinct. sapon. viridis cum pice. Tar may be used instead of oil of cade, or less oil of cade employed. For chronic eczema, psoriasis of the scalp or knee, etc.
8. Soft soap, or green soap, in alcohol, equal parts; Hebra's spiritus saponatus viridis. To remove scales of psoriasis and seborrhœa. I frequently add thymol gr. xv to ℥j.
- 8a. Green soft soap alone is very useful for a similar purpose.

Sulphur.

9. Precipitated sulphur, alcohol āā ℥j. For acne (Hebra).
- 9a. Sulphur, alcohol, æther, glycerin, carbonate of potassium, of each ℥ij, rosewater ℥viiij for acne, or without the water rubbed in for comedones.
10. Sulphurated potash ℥ss, limewater ℥xvj. For pityriasis versicolor, pustular and parasitic diseases.
11. Sulphurated potash, sulphate of zinc, of each ℥j, rosewater ℥iv. For acne indurata (Bulkley). Duhring speaks highly of the same lotion for lupus erythematosus.

Tar.

12. Liq. picis carbonis ℥j to ℥ij, solution of the subacetate of lead ℥j to ℥ij, rosewater ℥viiij. For eczema and pruritus.
13. Liq. picis carbonis, diluted 1 to 40 or 1 to 80 with water or spirit, may be painted on in chronic eczema.
14. Liq. picis carbonis ℥ij, calamine lotion ℥viiij.

Thymol.

14*a*. Thymol ʒj, liq. potassæ ʒj, glycerin ʒss, elderflower water ʒviiij. A good hair lotion for dandriff, etc. For other hair lotions see formulæ 43 to 48.

ASTRINGENT LOTIONS.

15. Collodion (not the flexible). Acts by mechanical compression. Useful in dilated vessels of acne rosacea, in lupus erythematosus, and in small superficial capillary nævi.

16. Hamamelis tincture 1 part to water 4 parts. For dilated capillaries.

17. Tannic acid gr. 40, French vinegar ʒss, water ʒviijss. For seborrhœa (Neligan), and in hyperidrosis.

18. Alum gr. 20, sulphate of zinc gr. 10, glycerin ʒj, rosewater ʒiv. For erythema, intertrigo, and eczema (Tilbury Fox).

19. Boric acid, a saturated solution. For eczema and erythemata.

ANTI-PRURITIC LOTIONS.

20. Alkaline solutions and certain antiseptics exercise most influence in this respect.

21. Borax ʒij, glycerin ʒss, water a quart. In urticaria, and as a wash for the head in seborrhœa.

22. Borax, carbonate of ammonia, of each ʒjss, glycerin ʒj, diluted hydrocyanic acid ʒiij, water ʒxvj, diluted 1 to 4 times (Startin, senr.). For vesicular and sebaceous diseases.

23. Carbonate of potash ʒij, water ʒviiij. In the early stages of eczema, to allay itching.

24. Sodium bicarbonate ʒj or ʒij, glycerin ʒjss, elder-flower water ʒvj. Urticaria, some eczemas, and pruritus.

25. Liq. picis carbonis ʒij, water ʒviiij. For pruritus, urticaria, and eczema, when not too acute. Begin with weaker lotion for eczema.

26. Carbolic acid, 1 in 60 of water. For pruritus and urticaria.

27. Terebene ʒj, water ʒviiij. For pruritus and urticaria.

28. Sanitas ʒij to ʒiv, water to ʒviiij. For pruritus and urticaria.

29. Salicylic acid ʒjss, borax ʒj, glycerin ʒj. Mix the acid, borax and glycerin, heat gently until dissolved. This can then be diluted with glycerin, alcohol, or water to any extent. ʒj of the first mixture, ʒj alcohol, water to ʒviiij, is a good proportion. Very useful in pruritus and urticaria, and does not smell.

30. Menthol gr. 2 to gr. 10 to alcohol ʒj.

31. Solution of subacetate of lead ʒij to ʒiv, distilled water to ʒviiij. For same.

32. Perchloride of mercury gr. 2, glycerin ʒss, chloroform water to ʒviiij, For same.

33. Diluted hydrocyanic acid ʒj corrosive sublimate gr. 1, emulsion of almonds or elder-flower water ʒvj.

33*a*. Diluted hydrocyanic acid ʒjss, solution of acetate of ammonia ʒj, infusion of tobacco to ʒviiij. For pruritus ani seu vulvæ (Tilbury Fox).

33*b*. A similar lotion, but with tinct. digitalis ʒiij, and rose-water instead of tobacco-water (Thompson).

34. Diluted hydrocyanic acid ℥ij, borax ℥j, rose-water ℥viiij. For senile pruritus (Neligan).

35. Carbolic acid ℥j to ℥ij, liquor potassæ ℥j, linseed oil ℥j. Mix and add oil of bergamot *q.s.* Shake before using (Bronson's anti-pruritic oil).

36. Potassium cyanide ℥j, water a pint. To be kept in a dark place. For pruritus. Use with caution.

37. Benzoin (compound tincture of), or Friar's balsam. For pruritus vulvæ (Reeves). To be painted on undiluted, with a camel's-hair brush. An excellent plan.

38. Benzoic acid ℥ij, glycerin ℥j, water ℥viiij. For pruritus and urticaria.

SEDATIVE ASTRINGENT LOTIONS.

Lead.

38*a*. Lead.—Solution of the subacetate ℥v to ℥xx, glycerin ℥xv, water ℥j. For erythema, eczema, excoriations, etc.

39. Lead with milk.—Solution of the subacetate ℥j, fresh milk ℥ij. Shake well together in a bottle. For eczema and other acute inflammations.

40. Lead, glycerin of subacetate of, B.P.—It may be painted on as it is in chronic eczema; in more active cases, it is diluted 1 part to 7 of glycerin at first, and the strength gradually increased. It may also be diluted with distilled water.

Liquor picis carbonis is frequently added to the above lotions from ℥ij to the ℥j upwards. In eczematous inflammations it should be used tentatively over a small area at first.

Zinc.

41. Calamine lotion.—Powdered calamine ℥ij, oxide of zinc ℥ss, glycerin ℥xv, rose-water ℥j. For erythema and eczema, where there is little or no discharge, and for most actively hyperæmic conditions. The addition of tincture of yellow ochre ℥xv and of tincture of raw umber ℥x, makes a very good imitation of the natural colour of the skin, and therefore improves it as a face lotion.

In the skin department of Edinburgh boric acid gr. x, or precipitated sulphur gr. xv, are sometimes added to each ℥j of the above lotion.

Bismuth.

42. Bismuth nitrate gr. viiss, oxide of zinc ℥ss, glycerin ℥xv, hyd. perchlor. gr. $\frac{1}{4}$, rose-water ℥j. For acne rosacea and other hyperæmic conditions.

HAIR LOTIONS.

43. Strong liquid ammonia ℥j, sweet almond oil ℥j, spirit of rosemary ℥iv, honey water ℥j. For baldness (Wilson).

44. Strong ammonia liniment ℥ss, castor oil ℥ss, purified spirit of turpentine ℥ss, white precipitate gr. 15. Brush into the scalp with a hard brush (Tilbury Fox).

45. Tincture of cantharides ℥j, distilled vinegar ℥jss, glycerin ℥jss, spirit of rosemary ℥jss, rose water to ℥viiij. To be sponged into the scalp night and morning (Tilbury Fox).

46. Expressed oil of mace ʒss, spirit of wine ʒviij. To be sponged into the scalp (Bateman).

47. Perchloride of mercury gr. ij, spirit of wine ʒij. Use with a stiff brush for seborrhœa capitis, but not for more than two weeks at a time.

48. Vinegar of cantharides ʒj, glycerin ʒvj, spirit of rosemary ʒij, rose-water to ʒviij. To be sponged in night and morning.

49. Perchloride of mercury gr. 2, chloride of ammonium gr. 10, resorcin gr. 20, eau de cologne ʒij, glycerin ʒij, rose-water to ʒviij. For seborrhœa capitis and alopecia.

50. Sozo-iodolate of soda ʒij or ʒiij, eau de cologne ʒij, glycerin ʒij, rose-water to ʒviij. For the same.

Nascent Sulphur.

51. Hyposulphite of soda ʒiij, eau de cologne ʒj, distilled or rose-water to ʒviij, for lotion No. 1. Tartaric acid ʒjs, distilled water ʒviij, for lotion No. 2. Sponge in first No. 1 and immediately after No. 2. Less trouble, but not quite so efficacious, is to shake up equal parts just before using. Nascent sulphur, sulphurous acid, and a very little sulphuretted hydrogen, not enough to be objectionable, are produced (author's formula). This lotion may also be used for acne vulgaris, and whenever sulphur lotions are indicated. The proprietary article sulphagua is made on a similar principle, but has an acid salt instead of tartaric acid.

SOOTHING AND PROTECTING OINTMENTS.

1. Spermaceti ointment B.P.

2. Simple ointment B.P.

Unguentum paraffin B.P.

3. Ceratum petrolei (Martindale): vaseline 2 parts, paraffin (135° to 140°) 1 part. Melt and stir till cold.

4. Lanolin ʒvj, olive or almond oil ʒij. Lanolin alone is too sticky. Or lanolin ʒv, liquid paraffin ʒiij.

Cucumber.

5. Cucumbers 750 parts. Grate into a pulp, and add rectified spirit 250 parts. Pass through percolator to make spirit of cucumber. Then take lard 125 parts, spermaceti, 85, white wax 8, spirit of cucumber 8. Melt the fats, put them into a warm mortar, and stir in the liquor.

Rose Ointment.

6. Lard ʒj, white wax ʒij. Melt, and when half cooled add oil of bergamot ʒiij, otto rosar. ʒij. Used as a basis with other ingredients.

Rumex.

7. Rumex root ʒxviij, yellow wax ʒij, prepared lard ʒxij. Bruise the root, boil for two hours in distilled water, strain and evaporate to ʒiv. Add gradually the lard and wax already melted, and stir the whole until cold.

Any of the above ointments may be used as a menstruum for more active remedies.

SEDATIVE ASTRINGENT OINTMENTS.

Bismuth.

8. Bismuth oxide $\mathfrak{z}\mathfrak{j}$, oleic acid $\mathfrak{z}\mathfrak{v}\mathfrak{i}\mathfrak{i}\mathfrak{j}$, white wax $\mathfrak{z}\mathfrak{i}\mathfrak{i}\mathfrak{j}$. To be made in the same way as the oleate of zinc. To form an ointment, equal parts of vaseline, lard, or lanoline must be added. McCall Anderson strongly advocates this for eczema. Bismuth oleate may also be made by double decomposition.

Boric Acid.

9. Boric acid $\mathfrak{z}\mathfrak{s}\mathfrak{s}$, benzoated lard $\mathfrak{z}\mathfrak{j}$. It is very important that the boric acid should be ground into an impalpable powder; merely rubbing in a mortar is insufficient. Excellent in eczema, and as an antiseptic in wounds and excoriations. The British Pharmacopœia ointment is nearly double this strength and made with a mixture of hard and soft paraffin.

Lead.

10. Ung. diachyli (Hebra).—Boil together olive oil $\mathfrak{z}\mathfrak{x}\mathfrak{v}$, litharge $\mathfrak{z}\mathfrak{i}\mathfrak{i}\mathfrak{j}$ $\mathfrak{z}\mathfrak{v}\mathfrak{j}$, to a good consistence, and add $\mathfrak{z}\mathfrak{i}\mathfrak{j}$ of oil of lavender. For eczema, spread on linen and bind on. A simple way is to melt together equal parts of lead plaster and olive oil. These ointments are really oleates of lead.

11. Solution of the subacetate of lead $\mathfrak{m}\mathfrak{x}\mathfrak{v}$ to $\mathfrak{m}\mathfrak{x}\mathfrak{x}\mathfrak{x}$, vaseline, lanolin, or lard $\mathfrak{z}\mathfrak{j}$.

12. Lead (carbonate of) gr. 4, glycerin $\mathfrak{z}\mathfrak{j}$, simple ointment $\mathfrak{z}\mathfrak{j}$. For erythema (Tilbury Fox).

Zinc.

13. Unguentum zinci B.P.

14. Unguentum zinci oleatis B.P.

Bismuth and lead oleates may be made in a similar way.

ANTISEPTIC OINTMENTS.

Iodoform.

15. Iodoform gr. 3 to gr. 5, vaseline or lard $\mathfrak{z}\mathfrak{j}$.

16. Iodol gr. 3 to gr. 5, vaseline or lard $\mathfrak{z}\mathfrak{j}$.

17. Europhen gr. 5 to gr. 10, vaseline or lard $\mathfrak{z}\mathfrak{j}$.

These ointments are valuable for pustular eczema and impetigo contagiosa. Mr. Gerrard, formerly Dispenser at University College Hospital, made trial of a large number of plans for rendering the odour of iodoform less penetrating and disagreeable. The addition of creolin $\mathfrak{m}\mathfrak{v}$ to $\mathfrak{z}\mathfrak{j}$ of ointment, where there was not more than 20 grains of iodoform, was one of the most successful. An ointment made by macerating freshly ground coffee in melted lard, and straining, was also very good, but not readily prepared. The powdered oleate of zinc $\mathfrak{z}\mathfrak{j}$, iodoform gr. 5 to gr. 20, destroyed much of the odour. Of the various substitutes for iodoform, europhen and loretin are the next most effectual, but nothing entirely replaces it as a destroyer of pus cocci, and probably also of tubercle bacilli.

Mercury.

15. Ammoniated mercury gr. 10, lard ʒj. Specific for impetigo contagiosa after the crusts have been removed.

STIMULATING OINTMENTS.**Mercury.**

Ung. hydrarg. ammon. B.P., ung. hyd. ox. flav. of the same strength as the ung. hyd. ox. rub. of the B.P., ung. hyd. nitrat. and also dil. B.P. All these are useful separately or combined, strong or diluted, in chronic eczema, seborrhœa of scalp, and psoriasis.

16. Green iodide of mercury gr. 2 to gr. 15, lard ʒj. For acne (Hardy).

17. Red iodide of mercury gr. 5 to gr. 20, lard ʒj. For nodular syphilis, lupus, and acne indurata. A powerful preparation, to be used tentatively over a small area. Iodo-chloride of mercury gr. 3 to gr. 10, lard ʒj. To be used in the same way as the iodides.

Sulphur.

18. Iodide of sulphur gr. 10 to ʒj, lard ʒj. For acne.

19. Powdered hypochloride of sulphur ʒij, subcarbonate of potash gr. 10, lard ʒj, oil of bitter almonds ℥x (Wilson). An excellent remedy for acne, but it must always be made with the recently prepared powder of the hypochloride which has not been exposed to the air; if made with the liquid, it decomposes and irritates. Half or even one quarter strength is often sufficient.

Tar and its Allies.

20. Ung. picis B.P. For psoriasis and chronic eczema. (a) Creasote (b) oil of cade, (c) ol. rusci, ʒj or more of either to ʒj of lard, is much used for psoriasis and chronic inflammations.

21. Tar ʒj, camphor gr. 10, lard ʒj. In chronic eczema and other inflammations with pruritus.

Lead.

22. Iodide of lead gr. 12, chloroform ℥xx, glycerin ʒj, lard ʒj. For eczema and psoriasis.

Miscellaneous.

23. Perchloride of mercury gr. 2 to gr. 5, carbolic acid and olive oil of each ℥xx, zinc ointment ʒj (Unna). For lichen planus.

LINIMENTS AND OILY PREPARATIONS.**Carron Oil.**

1. Lime water, olive or linseed oil, of each equal parts. For burns and superficial dermatitis.

Calamine Liniment.

2. Prepared calamine ℥ij, zinc oxide ℥ss, lime water and olive oil of each ℥ss. Owing to the fact that zinc oxide saponifies olive oil somewhat readily, this liniment gradually thickens ; should it become too thick it is best thinned by addition of olive oil just before using. For eczema and acute dermatitis of all kinds.

At St. Mary's Hospital ℥j of lanolin is added, which makes it a less drying application, and is an improvement for some cases.

In the preceding the parts are wrapped in the oils, not rubbed with them. The following are rubbed in :—

Carbolic Oil.

3. Carbolic acid 1 part, olive oil 19 parts. For pruritic eruptions.

Thymol Oil.

4. Thymol gr. 20 to ℥j, olive oil ℥ix. For seborrhœa of the scalp, or in acute lichen planus.

Vasogen-Iodine.

Vasogen iodine 10 per cent. ℥j, liquid paraffin B.P. ℥j. For seborrhœa capitis, with or without moderate inflammation ; also for chilblains. Even undiluted the advantage of this and valsol-iodine is that they do not stain the skin, while they are readily absorbed. In these and similar preparations the iodine is not present in the free state, but usually as the addition-product of an unsaturated fatty acid.

A similar preparation to vasogen-iodine 10% can be prepared from the following formula : Iodine 10, strong solution of ammonia 6, oleic acid 32, liquid paraffin up to 100. This contains the ammonium salt of di-iodo-stearic acid.

Turpentine Oil.

5. Turpentine or oil of silver pine ℥j to ʒvj, olive oil to ℥j. For psoriasis. Oil of cade is a good addition, ℥j to ʒij to ℥j.

6. Perchloride of mercury gr. 2 to gr. 5, alcohol, ℥j, ol. pini sylvest. ʒvij. For alopecia areata. Should not be kept for more than a week.

7. Camphor and chloral hydrate equal parts rubbed up together. It makes a thick liquid suitable for severe local itching.

8. (a) Oil of cade, (b) beech or (c) birch oil, ℥j to ʒiv, olive oil to ℥j. For psoriasis, lichen planus, etc.

APPLICATIONS FOR LUPUS.

1. R. Zinci oxidi ; amyli pulv. āā ʒ $\frac{1}{4}$; vaselini albi ℥ss ; hyd. oleatis (5 per cent.) ℥j ; acidi salicylici gr. 20 ; ichthyol mxx ; ol. lavandulæ q.s. ; M. Fiat ung. Enough red Armenian bole or raw umber may be added to match the colour of the skin. The ointment is well rubbed in and covered with potato-starch powder. It is used to produce a certain amount of absorption of the lupus tissue (Brooke).

2. My own formula is—Iodoform gr. 10; creolin ℥iij; adip. benz. ʒj. To be rubbed in at night, and calamine lotion applied in the daytime.

3. Salicylic acid ʒss, collodion ʒj, to be painted on for lupus erythematosus (Payne).

4. Resorcin gr. 10 or more, collodion ʒj; for similar purpose. The weaker preparation should first be used, as resorcin and collodion sometimes have a distinctly caustic effect.

5. Benzoline. To be well rubbed in to remove the fatty scales of lupus erythematosus; an antiseptic ointment like the iodoform and creolin to be rubbed in afterwards.

PASTES AND VARNISHES.

Pastes may be made hard or soft.

The hard pastes contain more or less gelatine. One of the most popular and generally useful is

Unna's Gelatin Paste.

1. Oxide of zinc, gelatin, of each ʒjss, glycerin ʒiij, aq. destill. ʒiv. To this, as a basis, gr. 5 or gr. 10 of salicylic acid, resorcin, ichthyol, thiol, or other antiseptic may be added. The solid mass must be melted by placing the pot in hot water; it is then painted on and dabbed with wool, to prevent its sticking to the clothing. It is useful in subacute and chronic eczema and similar inflammations, where discharge is absent, or very slight. In hot weather, less glycerin and more gelatin may be added; but it does not solidify nicely in very hot climates. It is not adapted for hairy parts, as its removal is then painful.

2. This is only one of a series. One contains ʒj of lard and all glycerin, instead of glycerin and water, with the same amount of zinc and gelatin; but the large amount of glycerin is sometimes an objection, as the gelatin will not dissolve.

Soft Pastes.

These can be applied like ointments, but spread on the skin, leaving a coating on it, and absorbing secretion, instead of sealing it up. One of the best is

Lassar's Paste.

3. Zinc oxide and powdered starch, of each ʒij, vaseline ʒss, salicylic acid gr. x. For eczemas and other inflammations, whether dry or moist, provided that the discharge is moderate. It should be spread thickly on and covered with butter cloth. When changed the old paste can be cleaned off with olive oil. In acute inflammation, leave out the salicylic acid for a time, or use milder antiseptics, such as thiol or ichthyol.

Ihle's Paste.

4. Lanolin, vaseline, zinc oxide, and starch, of each ʒij, resorcin gr. 10.

Unna's Paste.

5. Terra silicea ʒj or ʒij to the ʒj of zinc or other ointment answers well. According to Gründer, the substitution of 10 per cent. of carbonate of magnesia for some of the other powders increases the absorbing power.

VARNISHES.**Pick's Varnish (Linimentum Exsiccans).**

6. Tragacanth 5 parts, glycerin 2 parts, distilled water 100 parts. It may be made by slowly triturating the powder with the water, or by letting the tragacanth soak in boiling water. Other ingredients, such as antiseptics, may be added. Used for eczematous surfaces, but it is not a very comfortable application.

Elliot's Bassorin Varnish.

7. Bassorin 48 parts, dextrin 25 parts, glycerin 10 parts, water to make 100 parts. It is claimed that it keeps better than Pick's formula, which it resembles, bassorin being the chief constituent of tragacanth. Used in eczema, acne, seborrhœic eczema, etc.

Unna's Ichthyol Varnish.

8. Ichthyol 40 parts, starch 40 parts, albumen 1 to $1\frac{1}{2}$ parts, water to 100 parts. Another, without albumen, is ichthyol 25 parts, carbolic acid $2\frac{1}{2}$ parts, starch 50 parts, water $22\frac{1}{2}$ parts. Used for subacute eczema.

TRAUMATICIN.

9. This is best made with chloroform, the B.P. solution in bisulphide of carbon is too offensive to be useful. ʒj of pure gutta-percha is digested in ʒix of chloroform, and the bottle shaken daily until a thick emulsion is produced. It takes two or three weeks to make properly. Chrysarobin and other medicaments can be added as required.

PLASTERS.**Emplastrum Fuscum of German Authors.**

1. Camphor ʒss, black pitch ʒvj, yellow wax ʒix, red oxide of lead ʒij, olive oil ʒiv. To be melted together until a little burned. For boils.

Emplastrum Hydrargyri (German Formula).

2. Mercury ʒiv, turpentine ʒij, yellow wax ʒiij, red plaster ʒjss. Spread upon linen. For acne rosacea, lupus vulgaris and erythematosis.

Plaster-Mull Hydrargyri (No. 88 Beiersdorf).

Mercury 20 parts, carbolic acid 10 parts, perchloride of mercury 2 parts, zinc oxide 10 parts. For boils and carbuncles.

Paraplast Hydrargyri (No. 255 Beiersdorf).

Mercury 50 parts, carbolic acid 75 parts. For lupus erythematosus and nodular inflammatory infiltrations.

Salicylic Acid Plaster (Unna).

3. It is made of 38 per cent. and 50 per cent. of the acid, equivalent to 25 or 10 grammes of the acid on $\frac{1}{5}$ of a square metre. It is made by Beiersdorf of Hamburg, and is valuable for softening and removing corns, callosities, and other epidermic thickenings.

Salicylic Acid and Creasote.

4. This is a similar plaster, with the addition of creasote to diminish the pain produced when the plaster is applied to lupus vulgaris, for which it is a valuable application. It is made of various strengths, from 20 per cent salicylic acid and 4 per cent. creasote up to 40 per cent. of each. In both these plasters, the salicylic acid is combined with caoutchouc and oleate of alumina into a magma, and spread on gutta-percha with a muslin backing. The salicylic acid is much more efficacious than when incorporated with the plaster basis, as is usually done. Unna has also used lanolin, with a small quantity of caoutchouc, as an excipient.

Emplastrum Vigo cum Mercurio.

5. Simple plaster 2,000 grammes, yellow wax 100, resin 100, ammoniacum gum 30, bdellium 30, olibanum 30, myrrh 30, saffron 20, mercury 600, liquid purified storax 300, larch turpentine 100, and oil of lavender 10. A blunderbuss handed down from the middle ages, and serviceable still. Much used in France for lupus and syphilitic infiltrations.

Vidal's Emplastrum Rubrum.

6. Red lead gr. 39, cinnabar gr. 23, diachylon plaster 3j. Used for lupus, boils, pustular folliculitis, and ecthyma.

Another formula is red lead 10, cinnabar 6, diachylon plaster 100.

DUSTING POWDERS.**Zinc.**

1. Oxide of zinc 1 part, powdered rice or maize, starch, or kaolin 3 parts.
2. The same with $\frac{1}{2}$ part of calamine or $\frac{1}{2}$ part of iris root. For excoriated surfaces, intertrigo, and eczema.

Mercury.

3. Calomel 1 part, and powders 1 or 2, 3 to 6 parts. For erythema of buttocks, etc., in congenital syphilis, condylomata, etc.

Creasote.

4. Creasote ℥xvj, kaolin 3j (Marshall). For erysipelas, erythema, eczema, etc.

Tar.

5. Wood tar 1 part, kaolin 4 parts (Sangster). For the same.

Boric Acid.

6. Impalpably powdered boric acid 1 part, and kaolin, rice starch, or white fuller's earth 3 parts. A very good powder for intertrigo.

Camphor.

7. Camphor ʒss alcohol *q.s.*, oxide of zinc and starch āā ʒj. Use as a powder to allay the burning heat of eczema (Anderson).

PARASITICIDES.**Animal Parasiticides.**

1. The ung. sulphuris B.P. For scabies and vegetable parasitic eruptions.
2. Sulphur ʒss, ammoniated mercury gr. 5, sulphuret of mercury gr. 10. Mix and add olive oil ʒij, lard ʒij, creasote ℥iv=ung. sulphur co. of Startin, senr., for scabies.
3. *Wilson's Formula*.—Sulphur ʒj, carbonate of potash ʒij, benzoated lard ʒv, oil of camomile ʒss. Less irritating than B.P.
4. *Helmerich's Formula*.—Sulphur ʒij, carbonate of potash ʒj, lard ʒviiij.
5. *Hardy's Formula*.—Sulphur ʒj ; carbonate of potash ʒss, lard ʒvj.
6. *Wilkinson's Formula*.—Sulphur, tar, and lard, of each ʒij ; precipitated chalk ʒj, sulphide of ammonium ʒss. For tinea tonsurans and scabies.
7. *Hebra's Formula*.—Sulphur, oil of beech or oil of cade, of each ʒiiij, lard and soft soap, of each ʒviiij, prepared chalk ʒij.
8. *Naphthol*.—Naphthol 15 parts, prepared chalk 10 parts, lard 100 parts, soft soap 50 parts. For scabies, psoriasis, etc. (Kaposi). An excellent remedy ; does not irritate like sulphur. Sometimes it is better to omit the soft soap.
9. *Cazenave's Solution*.—Iodide of sulphur, iodide of potassium, of each ʒjss, water ʒxxxij.
10. *Liquor Calcii Sulphidi*.—Slaked lime ʒj, sulphur ʒv, water ʒxx. Boil for half an hour and filter. Make the quantity up to ʒxx. For scabies and psoriasis.
11. *Vlemingx's Solution*.—Slaked lime ʒij, sulphur ʒiv, water ʒxx. Boil in an iron vessel, and stir with a wooden spatula to a perfect union. For scabies and acne.
12. *Storax*.—Liquid storax ʒj, lard ʒij. Melt and strain. For scabies and psoriasis.
- 12a. Ung. staphisagriæ B.P. For pediculi corporis.
13. Carbolic acid solution 1 in 40. Sponge along small portions of hair to destroy nits.

Mercury.

14. Ung. hydrarg. ox. rub. B.P. For pediculi capitis.
15. Ung. hyd. ammon. B.P. For pediculi capitis.
16. Perchloride of mercury gr. 4, acetic acid ʒss, water ʒviiij. For the nits of pediculi capitis ; sponge small portions of the hair with the lotion.

Vegetable Parasiticides.

For early stages of ringworm or favus of scalp, blistering applications will often arrest the disease. They should not be used for children under six.

17. *Coster's Iodine Paint* (see Caustics, F. 7).—Paint on firmly, and let a crust be formed; remove this, and renew paint.

18. Hydrarg. perchlor. gr. 2 to gr. 4, acetic acid or glacial acetic acid ʒj. Makes a blister (Aldersmith). Use cautiously over a small area at a time, as it is a painful application.

19. Acetum cantharidis B.P.

20. Glycerin of carbolic acid B.P., or even 1 in 3.

Strong Applications for Later Stage of Ringworm.

These also should not be used in strumous children or those under six years of age, and at all times with caution and over a limited area at first.

21. Nitrate of mercury ointment, sulphur ointment, and carbolic acid in equal proportions, either diluted or not, as required. A good, but dirty preparation. It should be made without heat, and the carbolic acid thoroughly incorporated with the sulphur ointment before the citrine ointment is added, and this last should be free from excess of nitric acid (Aldersmith).

22. *Croton Oil*.—As a liniment, croton oil 1 part, olive oil 3 parts, cautiously increased. Use cautiously over about $\frac{1}{2}$ in. square at a time. The pure oil may be used to individual hairs, a minute drop being introduced into the hair follicles with a needle.

Boric Acid.

23. *Boric Acid*.—Boric acid gr. 20 or *q.s.*, sulphuric æther ʒj, rectified spirit ʒj. To make a clear saturated solution. To be dabbed on with a sponge, so as to soak into the scalp (Cavafy).

Chrysarobin.

24. Chrysarobin gr. 10 to gr. 20, benzole ʒj.

25. Chrysarobin gr. 7, chloroform ʒj (Aldersmith). For same purpose as boric acid solution.

26. Chrysarobin ʒss to ʒij, lanolin c̄ oleo ʒj. For ringworm of scalp, fork, and axillæ, and tropical forms; also valuable in alopecia areata. Patients should be warned of the possibility of its producing erythema.

27. Goa powder, which contains 80 per cent. chrysarobin, may be substituted.

Mercury.

28. Perchloride of mercury gr. 1 to gr. 3 in alcohol ʒj.

29. Perchloride of mercury gr. 2 to gr. 5, *q.s.*, in lard ʒj.

30. (a) The yellow oxide, (b) the ammonio-chloride, and (c) the nitrate of mercury, are all parasiticides, but rather mild ones, and adapted for tinea circinata, (a) oleate of mercury 4 to 20 per cent. with or without lanolin, a very good preparation.

Salicylic Acid.

31. Salicylic acid gr. 40 to gr. 60, alcohol ℥vj, æther ℥ij. Or—

32. As an ointment in the same proportion to ℥j of lanolin c̄ oleo. I have also used Unna's plaster with some benefit, and the glycerin cream over a limited area.

32a. Salicylic acid gr. 10, collodion ℥j. Paint on for a week, then remove forcibly, one blade of epilation forceps being inserted beneath the collodion, then the pellicle pulled off; it brings a large portion of the diseased hair stumps away; but as the removal is rather painful, the treatment is not suited for the very young. When the scalp is clear, renew the application.

Thymol.

33. Thymol ℥ss to ℥ij, lanolin ℥ij. Thymol and menthol ℥ss to ℥j of chloroform or spirit and æther (Malcolm Morris). Thymol may also be combined with copper oleate ℥j; thymol ℥j, sulphur ℥j, lanolin and lard to ℥j.

Copper Oleate.

34. Pure oleate of copper ℥ss to ℥ij; lanolin c̄ oleo ℥j. Valuable for tinea tonsurans. It is especially valuable at an early stage, as it renders wholesale epilation comparatively painless after it has been rubbed in for a few days.

May be combined in equal proportions with mercuric oleate.

35. *Sulphurous Acid*.—Pure, or with an equal quantity of water. For tinea versicolor.

36. Hyposulphite of sodium ℥vj, water ℥viiij. For tinea versicolor and tinea cruris.

All the sulphur preparations are vegetable, as well as animal parasiticides.

37. Borax ℥iv, glycerin ℥ij, water ℥vj. For tinea versicolor. Also glycerin of borax B.P. for lichen circinatus, tinea versicolor, and erythrasma.

Resorcin.

38. Resorcin ℥j, lanolin ℥j, and liquid paraffin ℥ij.

In some cases oleate of copper ℥j is a useful addition.

Turpentine.

39. Perchloride of mercury gr. 2, alcohol ℥j, turpentine ℥vij.

40. The ol. pini sylvestris is less unpleasant than ordinary turpentine, and ℥j of oil of lavender may be added. For tinea tonsurans and alopecia areata.

PILLS.**Laxative.**

1. Aqueous extract of aloes gr. i, extract of belladonna and extract of nux vomica, of each gr. $\frac{1}{8}$. Mix. Take one every night. For chronic constipation.

2. Aloin gr. $\frac{1}{8}$, strychnia gr. $\frac{1}{60}$, extract of belladonna leaves gr. $\frac{1}{8}$. For the same (Schieffelin).

Arsenic.

3. Arsenious acid gr. 1, extract of hop ʒj. Mix, and divide into 30 pills. Take one three times a day after meals. For psoriasis, etc.

4. *Asiatic Pills*.—Arsenious acid gr. 66, powdered black pepper ʒix, gum-arabic and water q.s. Divide into 800 pills; each pill contains .0825, or $\frac{1}{12}$ of a grain of arsenious acid. This formula is much used on the Continent, and Hebra gave three pills once a day immediately before dinner, increasing the number according to the tolerance of the patient and the obstinacy of the disease. It is, however, much safer to begin with one after meals, as they are less likely to derange the digestion.

5. Arsenate of soda gr. 1, water sufficient to dissolve, powdered guaiacum ʒss, oxysulphuret of mercury gr. 20, mucilage q.s. Divide into 24 pills. One three times a day (Wilson).

6. Arsenate of soda gr. 2, extract of hop gr. 20, sulphate of iron gr. 20, extract of nux vomica gr. 3. Divide into 24 pills.

7. Arsenate of iron gr. 3, extract of hop ʒj, powdered marshmallow ʒss, orange-flower water q.s. Divide into 48 pills; each contains $\frac{1}{16}$ of a grain of arsenate of iron (Biett).

8. Iodide of arsenium gr. 2, manna gr. 40, mucilage q.s. Make 40 pills.

It is very questionable, considering the smallness of the dose, whether there is any material difference in the action of these different salts of arsenic, except so far as they differ in the relative quantity of arsenic they contain. It is always safer to give the arsenic after meals, and where there is irritability of stomach from its use, opium may be combined with it.

Phosphorus.

9. Phosphorus is sometimes useful in psoriasis as a nervine tonic, and, according to Burgess, in lupus. It is, however, so difficult to make up into pills, that unless the druggist is skilful either an inert substance or unequal dosage is produced. It is better to order them, therefore, in the ready-made form of coated pills, which are now furnished by so many reliable English and American houses.

POWDERS.

1. Precipitated sulphur gr. 10 to gr. 60, acid tartrate of potassium gr. 10 to gr. 20, powdered ginger gr. 2, white sugar gr. 20. Take in milk night and morning for hyperidrosis of hands and feet, etc.

Pulvis Rhei cum Soda.

2. Powdered rhubarb gr. $1\frac{1}{2}$, dried bicarbonate of soda gr. 2, powdered ginger gr. $\frac{1}{2}$. (East London Hospital for Children.)

Pulv. Rhei Hydrargyrata.

3. Pulv. rhei c̄ soda gr. 4, hyd. c̄ cret. gr. 1. (East London Hospital for Children.)

Either is very useful as an alterative powder for children.

MIXTURES.**Aperient.**

1. Magnesium carbonate gr. 15, magnesium sulphate ʒj, peppermint water ʒj.
2. The same, with the addition of the wine of colchicum ℥xv in gouty states.
3. Magnesium sulphate, sodium sulphate, each ʒj, tincture of belladonna ℥v, syrup of ginger ʒss, infusion of cloves to ʒj. For scybala.
4. Magnesium sulphate ʒj, compound tincture of cardamoms ℥xx, compound infusion of roses ʒj.
5. Sodium bicarbonate gr. 10, pulv. rhei gr. 4, tincture of hyoscyamus ℥x, dill water ʒj. A mild aperient for dyspeptic conditions.
6. Cascara sagrada liquid extract ℥xv, tincture of belladonna ℥v, infusion of cloves ʒj.

Diuretic.

7. Acetate of potassium gr. 15, bicarbonate of potassium 10, spirit of juniper ℥xv, infusion of broom ʒj. Before meals, well diluted.

For Dyspepsia.

8. Sodium bicarbonate gr. 10 to gr. 15, sal-volatile ℥x, compound infusion of gentian ʒj. Half an hour before meals.
9. Sodium bicarbonate gr. 10, tincture of nux'vomica ℥v, glycerin ℥xv, compound infusion of orange peel ʒj. Ten or fifteen drops of the cascara sagrada liquid extract is often a useful addition. To be taken half an hour before meals.
10. Bismuth carbonate gr. 10, sodium bicarbonate gr. 10, compound powder of tragacanth gr. 10, infusion of orange ʒj, tincture of nux vomica ℥v.

For Atonic Dyspepsia, and as a Tonic.

11. Diluted nitro-hydrochloric acid ℥x to ℥xv, glycerin ℥xx, tincture of cascarilla ʒss, water ʒj. The same with sulphate of magnesium ʒj is often useful in bleeding piles.
12. Diluted phosphoric acid ℥xv, tincture of nux nomica ℥v, glycerin ℥xx, water to ʒj.

Ferruginous.

13. Citrate of iron and ammonium gr. 10, citrate of potassium gr. 10, syrup of tolu ℥xx, infusion of calumba ʒj.
14. Citrate of iron and quinine gr. 5, syr. aurant ℥xv, water ʒj.
15. Mist. ferri comp. B.P.
16. Sulphate of iron gr. 2, sulphate of magnesium ʒjss, diluted sulphuric acid ℥xv, infusion of quassia to ʒj. For acne vulgaris, eczema, etc. "Startin's [the elder] mixture."

17. Syrup of the iodide of iron B.P. ʒss to ʒj, in water after meals. The water must be added only just before it is taken. For lupus and strumous affections generally.

All iron mixtures should be taken immediately after meals.

Arsenical.

18. Fowler's solution ℥ij to ℥x, tincture of hop ʒss, water ʒj. For psoriasis and other dry scaly eruptions, and for recurring vaso-motor disturbances, such as urticaria, pemphigus, hydroa.

19. Fowler's solution ℥iv, steel wine ʒj, simple syrup ℥xx, water ʒj.

20. Fowler's solution ℥v, citrate of iron and ammonium gr. 5, infusion of quassia ʒj.

21. The solution of arsenate of soda may be substituted in any of the above for Fowler's solution, but it contains little more than half the amount of arsenic present in the latter.

22. Hydrochloric solution of arsenic ℥iv, diluted hydrochloric acid ℥vi, tincture of perchloride of iron ℥x to ℥xx, water ʒj.

All these arsenical mixtures should be given well diluted immediately after meals.

Mercurial.

23. Perchloride of mercury gr. $\frac{1}{30}$ to gr. $\frac{1}{8}$, diluted hydrochloric acid ℥x, infusion of quassia ʒj.

24. Perchloride of mercury gr. $\frac{1}{10}$, iodide of potassium gr. 5, infusion of calumba ʒj, sal-volatile ℥xv. For syphilis, especially in the tertiary stage.

25. Liquor arsenii et hydrargyri iodidi, or Donovan's solution, dose ℥v, to ℥xxx, with a bitter infusion ʒj, contains 1 per cent. each of the iodides of arsenic and mercury. It is useful in lichen planus and many chronic scaly eruptions, as well as syphilides.

26. Bicyanide of mercury gr. $\frac{1}{10}$, infusion of quassia ʒj.

Donovan's solution is used in the tertiary stage of syphilis. Many use the other mixtures quite early; for my own part, I use them chiefly in the later secondary and tertiary periods.

27. **Decocta Zittmanni.** *Strong.*—R. radicis sarsæ concisæ ʒxij, aquæ fontanæ libras lxxii.—Digest for twenty-four hours, then add tied up in a piece of linen: sacchari albi, aluminis āā ʒvi, calomelanos ʒiv, antimonii sulphurati ʒj. Simmer down to 12 quarts; towards the close of the simmering add: seminum anisi contus., seminum fœniculi contus., āā ʒss, foliorum sennæ ʒiij, radicis glycyrrhizæ concisæ ʒjss. Press and strain; after standing until cool, decant the clear liquid and bottle 12 quarts. *Weak.*—To the dregs of the strong decoction add: radicis sarsæ concisæ ʒvj, aquæ fontanæ libras lxxii. Simmer down to 12 quarts, and towards the close of the simmering add: Corticis fructûs citri contusi, cardamomum minorum contus., radicis glycyrrhizæ concisæ, āā ʒiij, Squeeze and strain, and after standing until cool, decant the clear liquid and bottle 12 quarts. One bottle of the stronger decoction is to be taken warm before twelve o'clock in the day, and one bottle of the weaker

decoction cold between twelve o'clock and bedtime. It has been suggested that the mercurial and antimonial salts contained in the linen bag are useless, as undergoing no solution in the liquid, but Wilson fancied that the remedy answered better when prepared in accordance with the old formula than in a mutilated form. The treatment should be commenced with an active purge of calomel (gr. 4) and colocynth (gr. 8) in two pills; if the action of the bowels be sluggish, the purgative should be repeated in the evening of the fourth day (Wilson).

Alfred Cooper and Bouchardat say hydrarg. bisulph. rub. is the ingredient instead of antimonii sulphurati, and Cooper gives the following directions:—"The patient is kept in a room at 80° F. The diet consists of: Breakfast—boiled egg or bacon, tea (no sugar or spices); Lunch—butcher's meat and vegetables, no fruit; Dinner—soup, fish, poultry. The evening before the treatment one or two of the pills are taken, and for the next four days at 9 a.m., 10 a.m., 11 a.m., and 12 noon, half a pint of the strong decoction drunk very hot, and 3 p.m., 5 p.m., and 6 p.m., half a pint of the weak decoction cold. The patient is kept in bed except for one hour every evening. On the fifth day, the patient is allowed to get up, he may have a hot bath and dress, and is allowed, if he asks for it, a little brandy or whisky and soda. In the evening, one or two pills are again administered, the patient starting the decoctions the next day as before. So the treatment goes on until the fifteenth day, when it is discontinued."

He states that it succeeds in many cases in which the ordinary treatment has failed. Ulcers which were spreading in spite of ordinary syphilitic treatment, heal up under "Zittmann." Also in chronic syphilis affecting the nervous system.

27a. **Van Swieten's Spiritus Anti-venereus.**—Corrosive sublimate ʒss, spirit of wine ʒlxxx. Dissolve.

The French formula is:—Perchloride of mercury 1 gramme, alcohol (90%) 100 grammes, distilled water 900 grammes. A tablespoonful contains 16 milligrammes of the salt.

Miscellaneous Mixtures.

28. Oil of turpentine ℥x to ℥xxx, oil of lemon ℥ij, mucilage of acacia ʒss, water ʒss. Take immediately after meals three times a day. The last dose not to be later than six p.m., and during the treatment at least a quart of barley-water to be drunk in the course of twenty-four hours. For psoriasis, eczema, and hyperæmia of the skin (Author).

29. Antimonial wine ℥ij to ℥v, water ʒj. For eczema (Malcolm Morris).

30. Tincture of guaiacum ℥xl, tincture of aconite ℥ij, camphor water ʒss. For chronic skin diseases, especially with rheumatic taint (Tilbury Fox).

31. Tincture of iodine ℥ij to ℥v, in water after meals. For lupus vulgaris (Liveing). He also gives it combined with an equal quantity of Fowler's solution.

32. Tincture of cannabis indica ℥x to ℥xxx, compound powder of tragacanth gr. 10, water ʒj. For pruritus and prurigo (Bulkley).

FOR SUBCUTANEOUS OR INTRA-MUSCULAR INJECTIONS.

Mercurial Intra-Muscular Injections.

1. *Lang's Grey Oil* (Oleum cinereum).—Mercury and lanolin, of each 3 parts, olive oil 4 parts=30 per cent. During the first week the patient receives injections in two places in the back of '1 to '2 c.c. After from two to three days, the same quantity is injected in the same place, and every week '1 c.c. is injected throughout the whole course. A 50 per cent. oil is also used, the dose being '05 c.c.

2. *J. Althaus's Cream*.—One part mercury is to be incorporated into 4 parts each of lanolin and 2 per cent. carbolised olive oil.

3. *Yellow Oxide of Mercury* (Watraszewski's).—Yellow oxide of mercury 1 gramme, gum-arabic $\frac{1}{8}$ of a gramme, distilled water 30 grammes. Shake and inject a Pravaz syringe-ful deep into the tissues once a week, *i.e.*, 4 centigrammes, or $\frac{3}{8}$ of a grain.

4. *Perchloride of Mercury* (Astley Bloxam).—Perchloride of mercury 6 grains, distilled water 3j. Inject 20 drops ($\frac{1}{4}$ of a grain) once a week deep into the gluteal muscles. Very good, but very painful.

5. *Glutine-peptone-sublimate* contains 25 per cent. of mercuric chloride. It is prepared in a 1 per cent. solution, and a Pravaz syringe-ful (=1 centigramme, or $\frac{1}{6}$ of a grain) is injected.

6. *Succinimide of Mercury*.—1 per cent. solution. Dose, a Pravaz syringe-ful, or $\frac{1}{6}$ to $\frac{1}{3}$ of a grain (Vollert). Selenew thinks it is equally efficacious with the yellow oxide, and superior to the alanate, the salicylate, or the grey oil. Calomel injections are more dangerous.

7. *Schwimmer's Formula for Hypodermic Injection in Syphilis*.—Sozoiodolate of mercury gr. 12, iodide of potassium gr. 25, distilled water 3ijss. Inject 1 Pravaz syringe-ful a week, equal to an inunction of 3v ung. hyd.

8. The formula I use is sozoiodolate of mercury 3 grains, and iodide of soda 6 grains, rubbed up and dissolved in 4 drachms of boiled distilled water. 20 minims= $\frac{1}{4}$ grain is injected into the buttock once a week. This salt is much less painful than the perchloride.

9. *Salicylate of Mercury* (Eich).—Hydrarg. salicylatis 5i, paraffin oil 5ix. Shake well before using, and inject a Pravaz syringe-ful into the buttocks once a week. Said not to be painful, but Boucy found it too painful to use; and there is one fatal case on record.

10. *Benzoate of Mercury* (Stoukovenkoff).—Benzoate of mercury '30 grammes, chloride of sodium '10 grammes, chlorhydrate of cocaine '15 grammes, distilled water 40 grammes. From half to a whole Pravaz syringe-ful (15 m.) is injected daily=1 centigramme of the salt. 30 to 40 injections for an average case.

11. *Double Hyposulphite of Mercury and Potassium* (Dreser and Camerey).—'25 of a gramme is dissolved in 10 grammes of distilled water. From $\frac{1}{2}$ to a whole Pravaz syringe-ful is injected, which is a dose corresponding to $\frac{1}{12}$ to $\frac{1}{6}$ of a grain of corrosive sublimate. The double salt contains 31'4 per cent. of mercury. It is said to be not more painful than a morphia injection.

For Intra-Venous Injections.

1. *Perchloride of Mercury. Baccelli's Solution.*—Perchloride of mercury 1 grain, chloride of sodium 3 grains, distilled water 1000 grains. Filter and warm slightly before injection. Inject 15 minims, following the directions in the text. Note the objections to the treatment.

2. *Cyanide of Mercury (Chopping).*—A 1 per cent. solution in distilled water. 20 m. is injected daily.

Thiosinamin.

This drug is obtained from the volatile oil of mustard, and is chemically allyl-sulpho-carbamide. It was introduced by Hans Hebra as an injection method for lupus vulgaris, but is not now used for this, but is very valuable for keloids and hypertrophic scars. It occurs in white crystals. The original solution was alcoholic, but this gives much pain, and the following is now used. Thiosinamin 8 grains, glycerin 20 minims, water up to 110 minims; Dissolve with gentle heat. Up to 20 minims in 3 or 4 injections; can be introduced beneath the tumour once or twice a week.

Cacodylate of Sodium.

This organic compound of arsenic, which has been described in the General Section on Therapeutics, may be used in sarcomata and similar serious cases, but unless further experience proves it to be less dangerous than it appears likely to be, should not be used for cases in which arsenic is usually suitable. It is sold in sterilised solutions in tubes containing one grain of the salt in 15 minims, which is the dose recommended.

Another similar compound is arrhenal (disodium methyl-arsenate), which is recommended by Gautier, as it has not the unpleasant effects of the cacodylate when administered by the mouth. The hypodermic dose is 5 to 10 centigrammes, or $\frac{1}{2}$ to $1\frac{1}{2}$ grains. Squire supplies an injection of $\frac{1}{2}$ grain in 10 minims, as well as $\frac{1}{2}$ grain globules for administration by the mouth.

Coley's Fluid.

The fluid is prepared by growing the *Streptococcus Erysipelatis* and the *Bacillus Prodigiosus* in the same flask for a certain number of days. The resulting culture is then sterilised by heat, filtered through sterilised filtering paper, and a small quantity of carbolic acid added, so that the resulting fluid contains 0.5 per cent. of carbolic acid.

The fluid is injected hypodermically with all antiseptic precautions, in the neighbourhood of the tumour. It is, however, necessary to use small doses at first, that is, not more than half a minim, as severe fever often follows larger doses.

This fluid has been recommended for malignant tumours. The success, however, has only been very meagre, and as far as mycosis fungoides is concerned quite failed in one of my cases.

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